The RUBBER AGE

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Court Declares Putnam Balloon Tire Patent Invalid in Goodrich Suit

Famous Litigation Was Watched by Entire Manufacturing Industry—History of Balloon Tires is Brought Out in Testimony—Basic Principles of Low Pressure Tires Known as Far Back as 1904

THE famous litigation in the case of the Steel Wheel Corporation against the B. F. Goodrich Company over the Putnam balloon tire patent, which involved the question of who first invented the balloon type of tire, was decided in the Federal court at Detroit on June 14 in favor of the Goodrich company, when the Putnam patent was declared invalid and void. An appeal to a higher court will be taken, the plaintiff announced.

The action was started early in 1927 and charged the Goodrich company with having manufactured balloon tires in violation of the Alden Putnam patent held by the Detroit corporation. The case was of extreme importance to the entire tire manufacturing industry since if Goodrich had been found guilty of infringement, every balloon tire manufacturer would have been liable to heavy royalties which in the aggregate would have meant several hundred million dollars to the holders of the patent. The case was also interesting from the standpoint that the history of the development of the balloon casing was the crux of the testimony on which the decision rested.

The Goodrich Defense

The defense of the Goodrich company took the line that the balloon tire was "evolved" from the old high pressure type rather than as a result of Putnam's patent and that "oversized" low pressure tires were in use 20 years ago, long before the Putnam patent had been conceived. The defense also claimed that the patent was invalid on the grounds that it sought to protect basic principles of tire construction known to all tire manufacturers and in common use at the time of the granting of the Putnam patent.

Putnam filed his application for patent, August 13, 1920. The application was rejected on the ground that claims were devoid of patentable novelty. Putnam appealed and the patent was accordingly issued May 12, 1925, assigned to the Steel Wheel Corporation. Notice of alleged infringement was immediately served on all tire manufacturers. The test case against Goodrich was filed a year ago.

The retail market first saw the balloon tire in late 1923 and production got into full force in the spring of 1924.

In the decision handed down by Judge Arthur J. Tuttle the ruling that the patent was invalid and should be declared void was based on three points. The first of these related to prior publication in trade journals of the same principles of tire construction as were embodied in the Putnam patent. The second was that Ralph K. Mulford, the noted race driver, had used low pressure tires on his cars in 1917 and 1919, establishing direct prior use of the balloon tire principle. In the third place, the Judge held, "the claims made by the Steel Wheel Corporation are indefinite and uncertain to such an extent that for this reason alone they are invalid and void."

The case was so important from a standpoint of patent law and involved such important fundamental principles that its progress has been watched by the entire legal profession. The array of legal counsel on both sides included some of the most astute patent attorneys in the country. F. P. Davis was chief counsel for the Steel Wheel Corporation, while Merrill E. Clark, of New York, headed the defense for Goodrich.

In the course of the testimony, A. H. Marks, head of the old Diamond Rubber Company, testified that he had acquired the rights in the name of his company to manufacture low pressure tires as far back as 1909 from the Palmer Tyre Co., Ltd., of England. Sometime in 1904, Mr. Marks said, his company saw the possibilities of the cord tire over the then prevailing fabric constructed tire.

The Trade With Palmer

It was learned, Mr. Marks stated, that the Palmer Tire, Ltd., an English concern, held the patent rights to the cord tire, invented by two Englishmen, Christian H. Gray and Thomas Slooper. Mr. Marks testified he communicated with the inventors, expressing a wish to purchase the American rights to their invention. Gray replied that he and Christian were not ready then to place their patent on the market in the United States, but when they decided to sell the Diamond company would be given "first shot" at it.

Late in 1909, Gray made a dramatic ap-

PATENT INVALID ON THREE COUNTS

In his decision handed down at Detroit on June 14, Federal Judge Arthur J. Tuttle held the Alden Putnam balloon tire patent invalid and void on three counts, enumerated as follows:

"Prior publication in trade journals expounding the same principals embodied in the Putnam patent.

"Prior use by Ralph K. Mulford, noted race driver, of balloon tires in 1917 to 1919.

"The claims made by the Steel Wheel Corporation, Lansing, the plaintiff, are indefinite and uncertain, to such an extent that for this reason alone they are invalid and void."

pearance at his office, Marks testified, announcing he was ready to sell.

"It is now 10 o'clock, I will give you until noon to decide whether you want to buy," the Englishman was reported to have said. "I just came from the Goodyear offices. You can have first shot for £60,000 cash, plus five per cent royalties for the life of the patent," Gray concluded.

"The deal was closed before the deadline set by the congenial Englishman," Mr. Marks declared.

J. D. Tew, president of the B. F. Goodrich Company, then testified as to his trip to the Palmer factory in Silvertown, England, in January, 1910. For nine months, Mr. Tew stated, he studied the processes of manufacturing the Palmer cord tire. A few weeks after his return in September, Mr. Tew said, the Diamond company began the manufacture of the first cord tires in this country.

Used Low Pressure Tires in 1910

While in England, Mr. Tew said, a set of large diameter tires then manufactured by the Palmer company was sent to Mr. Marks for the latter's use on his own private car. Two of this set were size 36 by 7. It is the contention of the defense that the seven-inch Palmer cord tire embodied all the features and advantages of the modern balloon tire.

Mr. Marks, in his deposition, recounted his experience with the large Palmer tires, explaining he used extremely low pressure in them and found they "greatly increased the riding comfort" of his car.

Three other defense witnesses, all of whom testified they had ridden in the Marks automobile equipped with the large Palmer tires, described their individual reactions to the riding qualities of the machine.

Ralph Mulford, veteran racng driver, testified that he had used a large low pressure tire, originally designed for airplanes and manufactured by the Goodrich company, on a car in a race in 1917. He said that later he had induced the Braender Tire & Rubber Company at Rutherford, N. J., to make a number of similar tires for him.

It has been indicated by the attorneys of the Steel Wheel Corporation that the case will be appealed and taken to a higher court, but for the time being the present decision comes as a relief to the majority of the tire manufacturing trade.

Rubber Institute Meetings

A number of meetings of committees and directors of the Rubber Institute, Inc., have been held since the organization was established on June 1. The board of directors met in New York City on June 15. Other meetings have been held at Akron with the director-general, Lincoln C. Andrews, in attendance. No further announcement has been made, however, as to plans of the Institute. General Andrews, it is understood, will schedule a big percentage of the meetings in Akron and will make a particular attempt to keep in touch with developments in that district although the headquarters of the Institute will be in New York City.

Companies Follow Firestone's Lead in Price Reductions

Manufacturers Stand to Lose Heavily on Depreciated Finished Inventories—Price Cuts Average Ten Per Cent—Dealers to Get Rebates on All Purchases Since May 11

THE reduction in the price of tires, which had been momentarily expected since the heavy drop in crude rubber prices in April, was announced by the Firestone Tire & Rubber Company on June 11 and was quickly followed by similar action on the part of the other large tire manufacturers. While the decline in tire prices did not come as a complete surprise it had been thought by the trade that the tire companies might wait until they had been able to unload more of their tire inventories which had been produced with high priced rubber. The retail dealers, however, realizing that a cut was inevitable had shown such a disposition to hold up orders that the manufacturers were virtually forced to make their reductions earlier than other conditions warranted.

Decline Averaged 10 Per Cent

Firestone Tire & Rubber Company announced reductions ranging from 4% to 17%. The average reduction on all classes of tires is estimated at approximately 10%. First grade low pressure tires have been reduced 12½% to 15%, third-grade tires have been cut 4% and solids have been reduced 10%.

General Tire & Rubber Company reduced all types of tires 4½ to 17%. Goodyear Tire & Rubber Company made a comparable adjustment in its prices.

B. F. Goodrich Rubber Company announced substantial reduction on all types of tires and tubes. The amount of reduction has not been announced, but it is understood that the company will meet cuts of other manufacturers.

Lee Rubber & Tire Corporation made reductions of 4% to 15% on Lee of Conshohocken tires and tubes and Staghound solid tires.

Officials of Mason Tire & Rubber Company, Seiberling Rubber Company, India Tire & Rubber Company and Miller Rubber Company have all announced that they would meet the cut with an approximate 10% drop in prices all along the line.

As tire dealers receive price protection for 30 days, tire manufacturers will be forced to allow them rebates as far back as May 11. The price reductions are expected to make heavy inroads in the earnings statements of the various companies but with the summer motoring season now in full swing the lower prices may cause the unit volume of tire sales to increase materially.

The trade considered the fact significant but not unusual that Firestone should have again been the one to have initiated the price cut. The manner in which the announcement by the various companies was made also called forth some comment in the light of the recent formation of the Rubber Institute and the declared purpose of that organization to "cooperate in competition."

The majority of the tires now held in the inventories of the various factories or shipped to dealers within the last 30 days have doubtless been manufactured with high priced crude rubber and with the 30-days rebate system in effect, the companies will be compelled to take heavy losses.

The net earnings at the end of the current year are expected to be considerably disappointing as compared to the relatively satisfactory earnings made during 1927. Although losses among the "big five" are expected to be covered in most cases by the substantial contingency funds set up by individual companies, it is not improbable that the companies will have to be content with only a small margin of profit, after interest and dividend requirements are deducted.

Losses Covered by Reserves

Of the "big five" in the industry—Goodyear, Firestone, U. S. Rubber, Goodrich and Fisk—Goodyear and Goodrich have built up the largest contingency reserves, the former having total reserves of $10,147,829 as of December 31, 1927.

Goodrich carried its contingency reserve on December 31, last, at $2,624,623. In addition working capital of $58,880,947 was largest in company's history, and has since been augmented by approximately $7,500,000 obtained through sale of common stock rights last January.

Firestone is well fortified to stand such a contingency as has arisen. Reserves for contingencies were carried in the 1927 balance sheet at $2,000,000.

On December 31, last, Fisk's working capital totaled $32,726,673. Contingency reserves, however, were lower than the previous year, amounting to $525,567, against $938,568. U. S. Rubber absorbed its entire reserve of over $8,000,000 in writing down inventories January 1, 1928, and consequently is forced to face the present situation with no contingency reserve.

The outlook for the second half of the year, however, is not wholly discouraging. Unless rubber shipments increase materially and stock on hand again climb to record heights it is improbable that the crude rubber market will go much lower and cause further inventory losses to the manufacturing companies and with the tire price reduction now out of the way, dealers are expected to renew their buying.

Some Problems in Merchandising RUBBER FOOTWEAR

Peculiarities of Footwear Distribution—The Seasonal Aspect—Jobber Vs. Factory Branch—Chain Store and Mail Order Problem—Price Inequalities—The Evil of Unwarranted Maximum Discounts

RUBBER footwear is one of the oldest branches of the rubber industry, dating back to Civil War days. While this fact has enhanced the stability of the industry, on the other hand it has encumbered the industry with trade customs and practices of distribution which are proving burdensome under present conditions.

In analyzing the business, one must first and always keep in mind that the bulk of its distribution to the ultimate consumer takes place in three months out of the twelve, namely, December, January, and February. This statement is made in full realization of the spring and early summer canvas footwear business, the spring trade on fishing boots, the fall trade on gymnasium and basketball shoes, and the industrial requirements of boots and heavy goods. To take care of this heavy three months' demand the factories must manufacture for nine months to a year. Thus immediately we have a finance problem and a warehouse problem.

Years ago, rubber footwear companies were divided into two general classes, namely, those who distributed largely through the jobber, and those who distributed through factory branches direct to the retailer. Those with jobbing house distribution maintained no branches, no salesmen, and practically no warehouses. As fast as the goods were manufactured they were shipped along to the jobber who performed the distribution functions. Companies which distributed direct to the retailer maintained factory branches in the large cities of the northeast and middle western sections to insure the retailer of service on his sizing business during the active selling period.

Orders were thus divided into two classes, advance orders and sizing orders. The advance order for fall delivery usually covered the minimum requirements to enable the dealer to meet the demand of the first few snowstorms. As he moved his goods, he immediately re-ordered the sizes he was short from the nearest branch or jobber. Thus it can be seen that a factory branch unit on rubber footwear alone has proved to be very uneconomical. It is necessary and pays for itself during only three months of the year, whereas an organization, with such expenses as rent and upkeep, goes on for the twelve month period. On the summer tennis business no such rush for deliveries as is necessary on winter merchandise is evident, and direct factory shipments on sizing as well as advance orders are adequate.

The large companies can solve the branch problem to a certain extent by combining footwear with tires and such merchandise as heels and soles, and many of them have done this, particularly in the more sparsely settled sections of the country. The smaller companies have adhered to jobber distribution for this reason.

The jobber has primarily been a leather shoe jobber, carrying rubber footwear as a side-line inasmuch as it is distributed to the same class of trade. This overcame the three-month objection to the exclusive rubber footwear branch and pro-rated the selling expense as the same salesmen could carry both lines. But what has happened in the leather shoe industry? The volume has concentrated into the hands of the large producers who operate their own stores and distribute from their own branches. This has gradually eliminated the leather shoe jobber as he could not live on rubber footwear alone, being faced with the same problems as the factory branch

Meanwhile, a new element has appeared in the distribution picture, the chain store and the mail order house. Buying in volume which has exceeded by far that of the old-time jobber, they have been in a strategic position to obtain large discounts; in fact, the whole price system of rubber footwear has been upset by this new element of mass buying. Even the department store, which in the old days was pretty much in the same class as the small retail buyer, has joined trading corporations which pool the purchases of several stores and get the maximum discount.

Now we come to the all-important matter of prices.

Footwear prices are made once a year, January 1st on winter goods and either August 1st or September 1st on other lines. On competing types and grades they are practically the same for all companies. That is to say, a men's standard quality self-acting light rubber will be listed at $1.00 per pair by all companies. But when you get into the field of heavy rubbers, one company may offer one with a red sole for $1.23, another one with a gray sole at a $1.18 and so on. Each company has its own individual specialties which are priced without much relation to the general run of standard merchandise.

Until the last few years, retailers and department stores, who in any case did not buy much over $3,000 worth of rubber footwear a year, paid net prices, all goods shipped after April 1st being due December 1st net, with 1% per month for anticipation, June 1st being the net date on tennis. Jobbers who handled as high as $50,000 worth of merchandise received the discount of 8%, 8% and 5% equivalent to about 19% which was the margin on which they did business.

How does the producing company make out under this arrangement? The margin which the factory aimed to get between selling price and factory cost has been in the neighborhood of 35 per cent. In selling direct to the retailer there are the added cost of the salesman's commission and expenses (5 per cent), freight, shipping expense, warehouse and branch expense, advertising, all of which total approximately 25 to 30 per cent, leaving a net margin of from 5 to 10 per cent.

But how about the plant which did business with the jobber? He eliminated the salesman's commission, advertising to a large extent, factory branch expense, for which he was given 19 per cent. Under these arrangements, a factory distributing 100 per cent by either method could theoretically operate profitably.

Margin of Profit Has Been Cut

But the fact is that very few shoes show 35 per cent gross today. Some show 25 per cent, others 20, and extreme competitive lines as low as 15 or 12. Not only that but chain store buyers have been getting 24 per cent off the list, sometimes higher. It is true that they buy in larger volume than the jobber and pay cash, taking the anticipation discount, but they require the manufacturer to carry many of the expenses which he did not have to do for the old-time jobber. For instance, they demand service on sizing from branches. Not only that, but extreme competitive conditions have led some manufacturers to give maximum discounts to buyers whose volume and credit rating in no way entitled them to them. There has been no consistent practice among the trade. The old clean-cut demarcation between manufacturers who distributed through jobbers and those who sold direct to the retailer has disappeared largely.

Now we find manufacturers who sell retailers and maintain branches, selling at the same time to jobbers, mail-order houses, and chain stores. There are a few exceptions, however. One large manufacturer sells direct from the factory as far as it is feasible to distribute, and turns the rest of the territory over to jobbers. Some of the smaller companies sell nothing but mail order houses and chains and are able to survive owing to the fact they are not saddled with distribution expense.

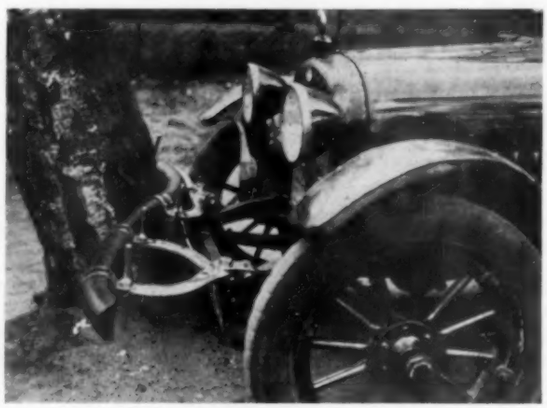
We are now passing through a period of falling prices such as has followed every important war in the last few centuries. This means that every business, and rubber footwear is no exception, must pay minute attention to every phase of its activity, manufacturing, buying, distribution, and selling in order to operate profitably. Probably the greatest strides in efficiency have been made in manufacturing where costs have been cut threefold in many cases. But many of these production economies have been lost to the producer and consumer due to high distribution costs.

The rubber footwear industry is in a very strategic position to put its house in order. It is not an industry in which new units are encouraged to start operations owing to the high capital investment and skilled labor necessary. There are only a dozen or so companies in this country. It would seem a simple matter for them to get together through the Rubber Institute or some such agency and iron out the discounts evil and other wasteful practices which have crept in during the last few years.

There is also no real good reason why the time-honored custom of making the footwear manufacturer finance his customers for a good part of the year should continue. A dealer finance corporation might be worked out which would equalize this burden. It has been done in the automobile industry. Cars are sold on the part payment plan, but the dealer is paid immediately. A finance corporation assumes the risk, makes the collections, and handles that end of it.

Rubber Automobile Bumper

A NEW rubber bumper has been developed by an association of German firms that promises to be a life-saver in the fullest sense of the term. A heavy cylinder of rubber is encircled by four metal bands that are supported at the ends of two spreading steel jaws. When the impact of a collision comes, the jaws spread, allowing the rubber to stretch and at the same time take the impact of the collision. It is believed that with such a bumper in use, accidents would be lessened one-fourth. The photograph reproduced herewith shows the results of running into a tree when the car was travelling at the rate of 25 miles per hour. No damage whatever was done.



Raw Materials for Automobiles

A HIGHER percentage of the total consumption of crude rubber is used by the automotive industry than is true of any other raw material, according to the National Automobile Chamber of Commerce. No less than 82 per cent of all the rubber consumed in the United States is used in motor vehicles, the N. A. C. C. says. Other materials having high percentages are plate glass (63 per cent) and upholstery leather (60 per cent).

A WEAR test developed primarily to study the wear-resisting properties of steel for tire chains will be described in a paper which W. H. Parker of the American Chain Company will read before the annual meeting of the American Society for Testing Materials at Atlantic City, June 25 to 29. An abrasion machine of special design was used in the test.

The Crude Rubber Outlook for The Current Year

Rubber Trade Debates the Question of How Much Rubber Will Be Accumulated In the Restricted Areas for Shipment on November 1—Rubber Growers' Association Offers Plan for Gradual Marketing of Extra Rubber

SINCE the announcement of the British government that rubber restriction in British Malaya and Ceylon would be cancelled at the end of next October no question has been more energetically studied than that of the probable tonnage of rubber which would be forthcoming immediately the bars were raised. Tied up with this question there is, of course, the allied one of what the unrestricted world production of rubber will amount to in 1929.

Estimates as to the extra tonnage of rubber which will be ready for shipment from the restricted areas on November 1 range all the way from 25,000 tons to 100,000 tons. The actual amount will depend in the first place on the policy adopted by the various plantations and, in the second place, on their ability to increase their present production.

It cannot be said that all plantations have immediately begun to produce as much rubber as possible although their managers know that any excess over their present allotment under the restriction scheme will be exportable after November 1. At numerous annual meetings of plantation companies, held in London since Premier Baldwin's announcement was made, a conservative policy of production has been adopted. In general, the companies adopting such a policy are those who have believed in restriction and who now believe that the interests of the industry as a whole would be poorly served by an effort to throw onto the market next November every ton of excess rubber they could produce in the meantime. Such companies are of the type who were willing to adopt voluntary restriction "for the good of the industry" before the British government acted in 1922.

Conservative Policy is Good Business

But those who are inclined to adopt a conservative production policy during the next few months are not entirely actuated by altruistic motives for the element of good business enters also. In the first place, an effort to go onto a larger production basis with a rush will be neither cheap nor easy on account of the problem of adequate labor and the probability that higher wages will have to be paid if an attempt is made to recruit labor too rapidly. Secondly, increased production would bring back into tapping the less productive parts of many estates which, for reasons of economy, have been undisturbed while shipments have been restricted to 60 per cent by the government. In other words, instead of producing only 60 per cent from all the area, many estates have simplified their work by taking all they would be allowed to ship from the more productive sections of the property. To bring the dormant sections back into tapping would mean a higher production cost on them.

The estimate that there will be 100,000 tons of rubber in the restriction areas awaiting shipment when the restriction bars are lifted appears to be too high. The new assessed standard productions of Malaya and Ceylon total 390,000 tons. For the seven months, April to October, extra production of 40 per cent would amount to only 90,000 tons. The new assessments are certainly none too low to represent fully the productive capacity of the estates. If Malaya estates have been assessed too low in some cases, as is claimed, certainly Ceylon assessments are high enough to adjust the total figure. Some estates, as has been developed at the annual meetings, had some excess rubber on hand on April 1 but the quantity was not large since there was no reason to anticipate either the cancellation of restriction or an early increase in the exportable percentage.

Even if all the plantation companies had been disposed to produce to the limit of their ability as soon as the restriction announcement was made on April 4, the output could be increased only gradually. New labor could be added only slowly and the limits of the labor supply would be of the greatest effect.

The Chas. T. Wilson Co., Inc., has estimated the rubber awaiting shipment on November 1 will amount to 70,000 tons, 60,000 in Malaya and 10,000 in Ceylon. One-half of these amounts is estimated as reaching the consuming markets in December, or in time to affect the 1928 calculations, in any way.

Other Estimates Are Much Lower

Other estimates, particularly from London, are well under the Wilson estimates. The releasing of even 40,000 or 50,000 tons at one moment, which appears easily possible, would have a serious effect on the market. The very anticipation of such an effect will tend to hold down the quantity which will be accumulated since the producers will be faced with the possibility of receiving a barely remunerative price for their hoard. The incentive to produce every pound possible and hold it for November 1 shipment is therefore not so great.

But in general the planters who have been held down to a 60 per cent production basis for so long will tend to get back to a free 100 basis without any prolonged delay. The Rubber Growers' Association has revealed its fear of the effect of a large accumulation of rubber on November 1 in a bulletin which suggests how such rubber should be marketed to have the least depressing effect on the market.

Although it is recognized that the policy of producers will be determined according to particular circumstances, the council of the R. G. A. recommends that as far as possible they spread the export of their accumulated stocks existing on October 31 over the following six months, exporting from November 1, 1928, to April 30, 1929, not more rubber each month than the output of the preceding month plus one-sixth of their "unexportable" stocks existing on October 31, 1928. The depressing effect which would result from the immediate shipment of large accumulated stocks in November would be minimized if such exports were made gradually in this way, and the council points out that producers are therefore more likely to gain than lose by following the course recommended.

The circular states that producers who have entered into forward contracts relating to their "unexportable" stock

are not thereby necessarily prevented from adopting the recommendation as in most cases forward contracts are for delivery over a period of some months and such monthly deliveries would probably not exceed in quantity the preceding months output, plus one-sixth of the "unexportable" stocks.

World production and consumption of rubber have been running so far this year in general line with early predictions which indicated that world stocks would be reduced about 70,000 tons during the year. If an extra 50,000 tons were forthcoming on November 1, together with unrestricted shipments in November and December, it is quite possible that the stocks for consumption at the end of the year would be as adequately comfortable, or more so, than they were at its beginning. The reduction in world stocks originally forecast as due to take place this year is reflected in the decline of the tonnage held on London, and also in the United States to some extent.

Another factor of uncertainty, both for the current year and for 1929, is the effect the lowered price for crude rubber will have on the native producer. It is argued that the decrease in income will make the native tappers less eager to work and that much less rubber with be forthcoming as a result. One authority believes that such curtailment would amount to 60,000 tons in 1929 if the price of rubber does not materially increase. Dutch authorities point out, however, that price declines in the past have had the effect of checking production only temporarily and that the small producers, and the tappers who are employed by them on a sharing basis, quickly readjust themselves to the new basis and return to work, especially when the money market in the interior begins to tighten. Discussion of the outlook for next year, however, will have to be postponed to a succeeding article.

Mack Buses Adopt Rubber Insulators

THE Mack Torque Insulator, which is being used on Mack buses between the engine and transmission, is now part of the standard construction. It is a flexible device designed for insertion in any straight-line driving shaft, for the purpose of cushioning driving load shocks, eliminating vibration between units and providing slight universal action or latitude for minor misalignment. The device was illustrated and explained in a previous issue of THE RUBBER AGE.

It consists of four large flexible blocks of live rubber, compressed into steel cups mounted on two arms, one driving and the other driven. Due to the initial compression on these blocks when assembled, a sudden excessive torque, such as when the clutch is suddenly let in, is absorbed by the temporary distortion of the rubber blocks and damage to the driven unit is thus averted. It also absorbs engine vibrations and prevents them reaching the transmission gears, thus eliminating noise, and in the reverse direction, it cushions the excessive stresses which would ordinarily reach the engine when brakes are suddenly applied.

The Schacht Rubber Manufacturing Company

HOW a casual item in a rubber trade journal was responsible for the launching of the Schacht Rubber Manufacturing Company of Huntington, Indiana, is told in an interesting manner by W. F. Schacht, founder and present general manager of the concern. Having been employed in a rubber factory in Elkhart and being also experienced in selling rubber articles, some of which he had himself invented and patented, Mr. Schacht was eager to start production on his own account. In a trade paper he saw a reference to an idle rubber factory at Huntington. Within a few weeks he had taken it over and production was started with only three men. This was in 1910. The first three months' business yielded only $278.

From the three persons originally engaged in the manufacture of rubber goods the Schacht force has increased to 170 employees. The annual business is now in excess of $1,000,000. Several buildings are now used by the company, all of them equipped with modern machinery. Mr. Schacht and his two sons retain entire control and management of the company.

The Schacht company manufactures a wide assortment of rubber novelties and specialties including pump valves, tank balls, jar rings, stoppers, bumpers, washers and many other items. Recent additions to the line are kitchen devices and ring-toss and horse-shoe games. The principal growth of the line has come from the inventiveness of Mr. Schacht who has devised and patented most of the items.

Rim Output Continues at High Level

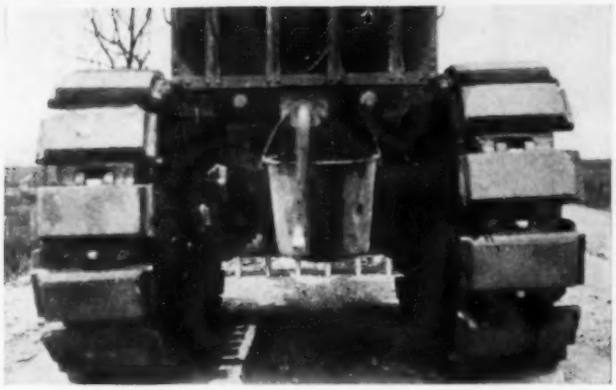
WHILE the production of rims during May exceeded the output of the same month last year, it fell approximately 130,000 rims short of last month's total, according to the report of the Tire and Rim Association of America, Inc. Production as a whole, however, is continuing at high levels as indicated by the fact that the total output for the five months of the current year exceeds the production of the corresponding period last year by 1,000,000 rims.

The number of rims inspected and approved during May totaled 2,185,592 as compared with 2,316,324 in April and 2,169,208 in May last year. The maintenance of this high rate of production reflects the heavy production in the automobile industry during the last few months. A record in the history of the industry was made in April.

A feature of the May figures as announced by the Rim Association is the inclusion of airplane rims in the statistics for the first time.

Rim Size	May No.	1928 %	5 Mos. 1928 No.	%
MOTORCYCLE				
24x3	628	0.0	17800	0.1
26x3	5722	0.2	20198	0.1
28x3	301	0.0	753	0.0
Total	6651	0.2	38751	0.2
CLINCHER				
30x3½	38191	1.8	175376	1.7
31x4	405	0.0	1968	0.0
Total	38596	1.8	177344	1.7
18" BALLOON				
18x3½	——	—	9362	0.1
18x4	139337	6.4	609420	5.8
18x3.25	15285	0.7	15285	0.1
18x4½	22790	1.1	53633	0.5
18x5	58	0.0	78	0.0
Total	177470	8.2	687778	6.5
19" BALLOON				
19x3½	222845	10.2	961300	9.0
19x4	217348	9.9	997006	9.5
19x3.25	4741	0.2	4741	0.0
19x4½	93193	4.3	453785	4.5
19x5	1658	0.1	1690	0.0
Total	539785	24.7	2418522	23.0
20" BALLOON				
20x2.75	4048	0.2	4048	0.0
20x3½	48503	2.2	313590	3.0
20x4	258847	11.9	1572794	15.9
20x4½	23577	1.1	162653	1.6
20x5	48307	2.2	238218	2.5
20x6	12355	0.5	54423	0.5
Total	395637	18.1	2345726	23.5
21" BALLOON				
21x3½	66013	3.0	292677	2.8
21x2.75	556611	25.7	2763044	25.2
21x4	57779	2.6	376045	3.6
21x4½	36168	1.7	220792	2.1
21x5	525	0.0	6156	0.1
21x6	——	0.0	1385	0.0
Total	717096	33.0	3660099	33.8
22" BALLOON				
22x3½	——	0.0	1509	0.0
22x4	709	0.0	1565	0.0
22x4½	——	—	640	0.0
Total	709	0.0	3714	0.0

Rim Size	May No.	1928 %	5 Mos. 1928 No.	%
HIGH PRESSURE				
30x3½-23	10508	0.5	26947	0.2
31x4 -23	640	0.0	640	0.0
32x4½-23	7158	0.3	28571	0.3
32x4 -24	10978	0.5	29811	0.3
33x4½-24	——	—	406	0.0
32x3½-25	——	—	——	—
33x4 -25	——	—	1293	0.0
34x4½-25	2914	0.1	4127	0.0
Total	32198	1.4	91795	0.8
20" TRUCK				
30x5	185023	8.5	806739	7.6
32x6	50735	2.3	161593	1.5
34x7	14171	0.6	47323	0.5
36x8	7549	0.4	28039	0.3
40x10	——	—	2142	0.0
Total	257478	11.8	1045836	9.9
22" TRUCK				
36x7	149	0.0	2798	0.0
38x8	200	0.0	200	0.0
Total	349	0.0	2998	0.0
24" TRUCK				
34x5	2499	0.1	9038	0.1
36x6	4210	0.2	19982	0.2
38x7	5139	0.2	22559	0.2
40x8	4799	0.2	12373	0.1
44x10	——	0.0	480	0.0
Total	16647	0.7	64432	0.6
AIRPLANE				
12x3	11	0.0	11	0.0
24x3	——	—	56	0.0
20x3½	49	0.0	226	0.0
26x3½	—	—	345	0.0
20x4	20	0.0	20	0.0
20x5	8	0.0	8	0.0
32x6	380	0.0	2066	0.0
18x4 Cl.	2508	0.1	4859	0.0
Total	2976	0.1	7591	0.0
GRAND TOTAL	2185592		10544586	



RUBBER in Caterpillar Treads

—A New Achievement in Tractor Construction and Equipment

ONE of the most notable achievements in tractor construction is the equipping of caterpillar tractors with rubber treads. Advantages accruing from it are numerous. There are many conditions under which it is highly desirable that the tread of a tractor should leave no mark on finished surfaces such as paved roads, factory floors, golf courses. There are also conditions under which the ordinary steel tracks, even when equipped with "grousers," give less effective traction than rubber tracks.

Caterpillar tractors equipped with rubber treads have found favor for use in maintaining gravel highways, for hauling heavy loads over hard-surfaced roads, and in maintaining shoulders on paved highways.

Rubber-tread caterpillar tractors are of particular advantage on secondary highways where there is a gravel surface since the rubber tracks take hold and give maximum pulling power without in any way marring the surface of the road. So important is this that some states have laws prohibiting the use of tractors with steel tracks because they tend to tear up the surface of the road. Rubber tracks have met with the full approval of states having such regulations. The rubber tread has also been found especially valuable in maintaining golf courses or other grass surfaces, where the ordinary steel track would be likely to disturb the turf. It carries the weight of the tractor over the velvety face of the green without in any way disturbing the turf.

Experiments in snow show the rubber treads to be virtually as effective as the standard ice "grousers," and they do not mar the surface of the ice. Where a tractor is used to clear municipal skating ponds, as has been the case, for instance, in a number of eastern centers, this is of material importance. Likewise, on concrete or asphalt pavement the rubber treads are found to be desirable beyond the ordinary steel track as they give firm traction without slipping, and leave no marks on the pavement. Because of such soft but firm tread, the rubber-tracked two-ton caterpillar tractor is also finding increased use on docks, where it is obviating the necessity of large gangs of stevedores. Tests show that it can easily handle a gross weight of over 6,000 pounds. The rubber tread has been found to work equally well on wet or dry surfaces. On a dry concrete floor it takes a sure foot hold, and on wet pavements the

The Rubber Treads Have Been Found to Give Entirely Satisfactory Traction on Snow-Covered Roads

Rubber Treads Protect the Turf from Injury

rubber seems to form a bond which insures firm and steady traction.

Caterpillar tractors with rubber treads are also finding increasing favor for use in and around industrial plants, one of their many advantages being that a speed of ten miles an hour is possible. This additional speed cuts the time of coming to and from the job, thus making possible a greater amount of work.

Again, when used on hard surfaces, such as concrete floors or even well-packed pavement with loose graveled faces, it has been found that the steel tracks sometimes slip and gouge the surface. The rubber tread gives greater traction and does no damage to these surfaces. Furthermore, tests have demonstrated that the tractor so equipped will, under the conditions described, pull a greater load without slipping than the one equipped with the steel tracks.

The rubber treads are of resiliant rubber and are extremely durable.

Semi-Annual Tire Replacement Sales

FOLLOWING the semi-annual compilation of tire dealers' stocks by the Rubber Division of the Department of Commerce, the department also publishes the statistics of semi-annual replacement sales of automobile casings and inner tubes by tire dealers to consumers, compiled from the monthly statistics of sales by tire manufacturers for other than original equipment purposes as reported to the Rubber Association of America.

The completion of the April 1, 1928 tire dealers' stock survey makes it possible to show the following table of retail sales by six months periods for the last three years. The figures are based on the assumption that there are approximately 100,000 tire dealers in the United States.

Periods	Casings	Inner Tubes
October, 1924—March, 1925	17,350,000	24,350,000
April 1925—September 1925	24,020,000	36,510,000
October, 1925—March, 1926	13,060,000	18,760,000
April, 1926—September, 1926	24,930,000	35,150,000
October, 1926—March, 1927	17,580,000	21,571,000
April, 1927—September, 1927	27,060,000	33,420,000
October, 1927—March, 1928	18,869,000	21,831,000

These statistics, which are believed to be reasonable estimates, indicate that relative consumption of inner tubes has declined sharply during the past two years. While retail sales of casings increased from 37,080,000 in the year ended April 1, 1926, to 45,929,000 in the year just ended, annual retail sales of inner tubes have been approximately the same for each of the past three years.

In the year ended April 1, 1926, tire dealers sold 1.49 inner tubes on the average with each casing, in the next year 1.33 inner tubes per casing, and in the year just ended 1.20 inner tubes per casing. Aside from the fact that repairing of inner tubes has been more common during the past two years than in 1925 and previously, it appears that inner tubes last longer in low pressure tires.

Tire and Tube Production Continues High

WHILE the production of pneumatic casings and inner tubes during April was slightly under the volume of output established in March, shipments increased materially indicating an increasing movement of tires through dealers, according to the report of the Rubber Association of America. The drop in the total production was due to the decrease in output of high pressure cords and high pressure tubes, this decline, as shown in the accompanying table, being great enough to counteract the slight increase made in production of the balloon type of casings and tubes.

Indications are that tire and tube manufacturers pushed their plants during May to the maximum capacity and that May production will set a new high record in the industry.

The figures for April as released by the Rubber Association represent 75 per cent of the total industry in the United States and have been brought up in the following table to equal 100 per cent:

Tire Tube Production

	March, 1928			April, 1928		
	Prod.	*Ship.*	*Inven.*	*Prod.*	*Ship.*	*Inven.*
Pneumatic Casings (*All Figures Represent Thousands*)						
All types	6,363	5,031	11,721	6,178	5,812	12,717
Balloon	4,029	3,333	5,565	4,412	3,978	6,544
High Pressure Cord	2,263	1,660	5,856	1,744	1,797	5,775
High Pressure Fabric	71	38	297	25	37	398
Solid and Cushion Tires	48	52	209	58	56	206
Inner Tubes						
All types	6,895	5,431	14,650	6,661	5,702	16,638
Balloon	4,296	3,470	6,728	4,489	3,754	8,579
High Pressure	2,599	1,961	7,922	2,171	1,946	8,060

Further detailed comparative tables covering previous months with yearly totals, will be found in the statistical section of this issue of The Rubber Age.

10 YEARS AGO

Items Reprinted from June 25, 1918, issue of The Rubber Age

THE War Trade Board revokes all licenses for the importation of manufactured rubber goods by ocean shipments . . . Answers to the War Service Committee of the Rubber Industry of America's questionnaire shows a total of 452 plants manufacturing rubber goods in the United States and employing 207,000 people . . . B. C. Swinehart, formerly of the Swinehart Rubber Company, joins Hewitt Rubber Company as manager of truck tire department . . . Twenty-five hundred women have replaced former men employees who have entered the military service at the Goodyear Tire & Rubber Company, Akron, O. . . . Conditions governing manufacture and distribution are changing rapidly in the rubber industry and are becoming more difficult . . . Goodyear is producing a record of 20,000 tires daily . . . New war contracts and the consequent need for greater expansion of factory facilities have caused the following plants to announce new building programs: Ross-Lambert Rubber Company, Cincinnati; Triple Airless Tire Company, Manorville, Pa.; Elmira Rubber Company, Elmira, Ont., Canada; Delion Tire & Rubber Company, Trenton; Great Republic Tire & Rubber Company, Oklahoma City; Kelly-Springfield Tire & Rubber Company, Akron; Barker Cushion Tire & Rubber Company, Chicago; Sandusky Rubber & Tire Company, Sandusky, O.; Giant Tire & Rubber Company, Findlay, O.; Marathon Tire & Rubber Company, Cuyahoga Falls, O., and Southland Tire & Rubber Company, San Antonio, Texas.

The British Institution of the Rubber Industry

Central Organization of Rubber Producers and Manufacturers in Great Britain Now Has 73 Members from the United States Included In Its Total List of Over 2,000—Fosters Rubber Technology

THE Institution of the Rubber Industry of Great Britain, known more familiarly throughout rubber circles as the 'I. R. I.' is rounding out the seventh year of its existence. Its record has been one of meritorious accomplishment in the field of cooperative assistance, not only to the British rubber trade but to the industry in general throughout the world. Starting in 1921 as the Rubber Club of Great Britain, with 31 members, and shortly afterwards changing its name to the present style, it has now grown to a membership of over 2,000. Nor has the membership been confined to citizens of the United Kingdom. The last annual report of the Institution shows that the composite membership includes 123 members in foreign countries, the United States leading with 73 and Japan following closely with 26.

On the occasion of the annual dinner in February of the current year, the president of the Institution, Lord Colwyn, recounted the admirable history of the organization and rightly stressed its growing influence throughout the world's rubber trade circles. It might be mentioned that not the least of the outstanding features in the history of the Institution has been the high calibre and capacity of its executives. Among them have been such prominent figures within rubber circles as Sir Stanley Bois, Sir George Beharrell, Col. Sealy Clarke, Philip Schidrowitz, James Fairbairn, Wm. Symington, Sir Frank Swettenham and Alexander Johnson,—names that have been among the best known in the rubber industry.

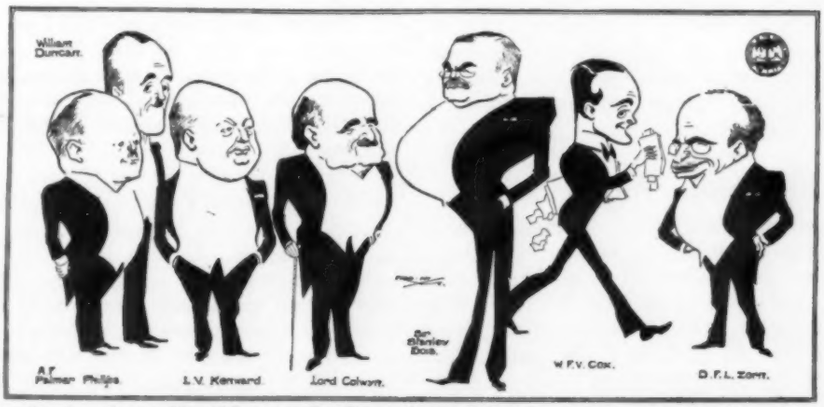
The organization was first evolved by a substantial group within the British rubber manufacturing and plantation interests. Its purposes, as outlined in the charter of the Institution, were chiefly (1) to maintain a center for the whole industry so as to keep in touch with the various allied associations on educational and scientific matters, (2) to advance and record scientific knowledge and to record inventions and recognize merit, (3) to bring out the capabilities of the younger members of the industry and give them a means of expression, (4) to encourage and widen the scope of technical education in the field of rubber technology and distribute scientific papers pertaining to studies within the industry, and (5) to maintain a diploma in rubber technology and rubber chemistry in order to recognize and raise the status of those working in the rubber industry.

With the increasing circle of membership, the Institution, not unlike our own Rubber Division of the American Chemical Society, has found it convenient and more highly effective to divide the organization into geographical groups and has established the Manchester, Birmingham, Scotland and Liverpool branches in addition to the central body in London. Separate meetings of these branches are held frequently.

The sixth annual meeting of the Institution was held in London on December, 1927, and was attended by the leading representatives of the industry. To further extend its influence a campaign for a larger membership is in progress and an invitation has been particularly extended to the plantation companies to participate in the organization. Both individuals and firms engaged in the rubber trade are eligible.

The Institution being essentially an educational body, it does not seek to make any money or increase its reserve funds and lives only by a sum sufficient to pay for its upkeep and carry out effective and useful work incident to its purpose of service to the rubber industry. During the last few years it has been particularly identified with carrying out educational exhibitions demonstrative of the growth and development of the rubber manufacturing industry. It has also taken an interest in any proposal for promoting technical education in rubber manufacture and technology and has fostered the introduction of teaching rubber manufacturing methods and rubber chemistry in various schools, notably the Northern Polytechnic in London and the Manchester Technical School, where full courses have been established.

The actual merchandising of rubber products has been exhaustively gone into through the meetings of the sales section of the Institution. The Institution also maintains a close cooperative arrangement through the Research Association library at Croydon for the borrowing of technical and general books and published data on the multiple phases of the industry. Incidentally this Research Association had the active support of the Institution at the time of its founding and has acquired the reputation of being the



Some of the Notables at the Last Annual Dinner of the Institution of the Rubber Industry, as Sketched by the Artist of the London *Tatler*

most complete reference source now extant as regards rubber information.

The technical papers discussed before the Institution are published periodically and add considerable wealth to the fund of information on the history and technology of the industry. To date over 150 papers of note have been discussed and published in the 'Transactions of the Institution of the Rubber Industry,' the official organ of the organization which is published bi-monthly.

Ordinary membership is open to all individuals connected with or interested in the rubber industry and no examination or technical qualification is required. The annual fee for such a membership is £1. 1s.

On various occasions American rubber technologists have delivered papers before meetings of the Institution. Invariably such representatives of the American rubber industry have found the most cordial welcome.

Care in Shipping Carbon Black

ALTHOUGH manufacturers of carbon black endeavor to ship their product in such a way that it will reach consumers in perfect condition, complaints are often received from rubber plants concerning torn bags and a resulting loss of some of the material. In an effort to correct this situation, Godfrey L. Cabot, Inc., have recently distributed information as to how Cabot blacks are packed in cars and how they can best be unpacked to avoid loss.

(1) The Cleat is Removed from One Side with a Pry-bar; (2) The False Door is Then Pulled Outward

Before loading is begun, the Cabot bulletin states, all cars are given a thorough inspection, including a test of the roof with a sprinkler hose. The floor and walls of the car are covered with heavy building paper to protect the sacks from chafing. Then both doors are closed with false doors instead of with boards nailed simply to the walls of the car.

In spite of this extra precaution of using an easily removable false door, complaints are occasionally received about broken sacks. The company believes that a majority of these result from incorrect removal of the false door and has accordingly prepared the accompanying photographs to show how the doors should be removed to eliminate all possibility of damage to the cargo. A few extra overslips are tacked up inside the doorway of each car to be used to protect any sacks which may become broken in spite of every precaution.

Rubber Belting Shipments Gain

THE exports of machinery belting of all classes during 1927 showed a distinct gain in the amount of rubber and balata belting shipped in comparison to leather or textile belting. In the seven years from 1920 to 1927, it is interesting to note that the exports of leather belting have declined from 31.9 per cent of all belting shipped to 26.1 per cent and textile belting has also fallen from 32.5 per cent to 31 per cent. On the other hand, rubber and balata belting have increased from 35.6 per cent of the total to 42.9 per cent.

Schaphorst's CHATS *with the* ENGINEER

By W. F. SCHAPHORST, M.E.

Belt and Electric Cooperation

IT is my opinion that we have seen a "vs" placed between "Belt Drive" and "Electric Drive," entirely too often. I have done it myself, but, let's not do it any more. I am a believer in both the belt drive method and the individual electric drive method, depending upon conditions. I always have believed in both.

A few years ago, while talking with a prominent manufacturer of power transmitting equipment, he told me that I was "butting my head against a stone wall" by writing articles that were favorable to belting. He said that belting was doomed.

But he was mistaken. There is need for both electric motors and belts. During the past decade the use of leather belting has been increasing more rapidly than the use of electric motors. Both are on the increase.

When there is an increase in the use of electric motors it often means that there is a corresponding increase in the use of belts because the motor is belted to several machines, as in group drives. And very often the motor is belted to a single machine instead of being directly connected.

In a recent advertisement by a large company who are themselves manufacturers of electric motors, they state that their belt driven machines shown in the ad save space, give higher motor efficiency and give improved power factor.

There is no question but that the electric drive has its place—for individual drives on machines of 50 h. p. or over; on portable machines; and where overhead cranes are used. But where the power consumption is small and where there are no overhead cranes, group driving is generally more economical than individually driven machines. Individual drive "looks" better but nevertheless in many instances electric drive is better. As stated before the two are *not* enemies. That is why I shall hereafter endeavor to use the words "Belt and Electric Cooperation" rather than the old "Belt Drive vs. Electric Drive."

Oil Wells Run Together

IN view of the fact that so much oil is used by rubber plants the very unusual incident recently related in the *Oil and Gas Journal,* might be of interest to readers of this publication.

Two oil wells located 660 feet apart at the top "ran together" at a depth of 2100 feet. When the drillers of one well lost a tool, and it was found in the neighboring well, they decided forthwith that something had happened—that they had come together. Both holes were then ordered plugged and abandoned.

Heretofore this writer always believed that drillers of oil wells as well as water wells made holes that were truly vertical. But this is positive proof that the holes are not always vertical. In fact it appears that the drillers themselves do not know exactly where the bottom is and it is therefore quite possible for several wells to be obtaining oil from the same oil pocket, unknown to the operators.

True, if all wells were 4,000 miles deep, and if they were all perfectly plumb, ALL of them would end at precisely the same point—almost. But I believe I am pretty safe in predicting that no well will ever be dug that deep. Do you disagree?

RUBBER CHEMISTRY
and Technology

The Swelling of Rubber

A Contribution to The Knowledge of Swelling Phenomena

By P. Stamberger*

SOME time ago a report[1] was made on the change in the swelling power of rubber produced by working it longer on a mill. In this work it was shown that raw rubber, which is restrained or limited in its swelling power, becomes on milling unrestrained in swelling power. At the same time a marked decrease in the extent of swelling was manifest. Later[2] it was shown that by mixing a certain quantity of carbon black into this dead-milled rubber of unrestrained swelling power, its swelling power again became restrained. At the same time an increase in the extent of swelling was shown qualitatively.

To explain the first phenomenon a theory was advanced by Klein and Stamberger[3], which was also successful in explaining the change produced by carbon black. According to this theory the extent of swelling of a substance is at least partly dependent on a structure which is greatly influenced by simple treatment, as in the milling of rubber, and which can be destroyed and restored.

This concept in no wise agrees with accepted views[4].

As there are very many unexplained features in the phenomena of swelling (Schröder's paradox), it seems to me that the investigation of these phenomena is of considerable importance.

In the present communication only experiments on the determination of the extent of swelling of unmilled rubber, dead-milled rubber, and mixtures prepared from dead-milled rubber by the addition of various quantities of carbon black are described. The determinations were carried out in the liquid solvent and in the vapor at reduced pressures.

Vapor Determinations

The determinations in vapor were made at reduced pressure according to the desiccator method in an air bath at 20° C. (temperature variation 1°C)[5]. Constant weight was reached in seven days and by two methods: (1) by letting the dry substance swell in the vapor and (2) after constant weight was reached, adding an excess of solvent and allowing the whole to stand until constant weight was again obtained. In both instances it was possible to observe a sharp cessation in the extent of swelling.

To determine the maximum swelling in liquid, an apparatus was used which is based on the same principle, and which has been previously described[6]. All the results given are values averaged from three determinations which agreed fairly closely (maximum variation 107%)[7]. They are given again in the table in the next column.

Assuming the substances in the solvent vapor to be in their maximum swollen condition, then despite equal extents of swelling, huge differences in consistency were noticeable. While the dead-milled rubber produced a viscous liquid without particular structure or firmness, the unmilled rubber had a marked structural appearance with little tackiness and great elasticity. In the carbon black mixtures an increasing firmness in these gels was observed with increasing proportions of black. With the addition of 5 per cent black by volume, swelling was still unrestrained. The substance at its maximum swelling point in vapor lost its original form but was no longer fluid. With a greater content of black the structural appearance was retained as with unmilled rubber.

An examination of the data in the table shows that the extent of swelling in liquid varies with every substance, but that it is the same in vapor regardless of the vapor pressure and of the previous history of the gel. This phenomenon was observed by Pohle[9] with unmilled rubber in benzene at certain very low vapor pressures. Pohle assumed on the basis of this observation that mastication does not produce any deep-seated change in rubber. The author does not share his view.

Table 1. Maximum Swelling in Liquid and Vapor

Substance	Maximum swelling in liquid (benzene) % by vol.	Maximum swelling in benzene-triolein vapor, figured on the rubber content (depression of the vapor tension in mm.) 35	14	7	3.5	Difference in swelling in vapor (3.5 mm. depression) and in liquid
Unmilled rubber	2000	47	100	105	123	1877
Dead-milled rubber[8]	241	47	90.5	105	127	114
Dead-milled rubber plus 15% carbon black by volume	680	46	99.5	107	117	563
Dead-milled rubber plus 15% carbon black by volume	615	48	100	100	128	487
Dead-milled rubber plus 25% carbon black by volume	690	47	101	104	125	565

Further it appears that unmilled rubber varies greatly in the extent of swelling in liquid and in vapor, but this is not the case with milled rubber. While with unmilled rubber this difference amounts to about 1880 per cent by volume, with dead-milled rubber it amounts to only about 120 per cent by volume.

The phenomena described cannot be explained on the basis of the accepted conception of swelling. The results point to the presence of a material factor, which is a constant, and which can be determined by swelling in solvent vapor. In the carbon black mixtures the increase in volume on swelling must be calculated on a basis of the rubber content to obtain comparable values.

Furthermore these phenomena point to the presence of a structural factor, which comes into play only in swelling in a liquid. Ch. Terzaghi[10] is of a similar opinion.

Until a further, rigid investigation is made as to the various factors involved in swelling, the author is not willing to advance any new theory, but it may be pointed out that these phenomena cannot be reconciled with accepted ideas of swelling. The experiments are being continued.

To A. van Rossem, Director of the Rijkrubberdienst, Delft, the author owes the privilege of preparing the mixtures. To the Director of the Institute of Inorganic Chemistry, E. H. Buchner, and to J. R. Katz, the author is very thankful for help and advice in this work.

(Amsterdam, University Chemical Laboratory. Received December 13, 1927.)

Notes

*Translated by J. P. Fahy from *Recueil des Travaux Chimiques des Pays-Bas*, Vol. **47**, pp. 316-320 (Feb. 15, 1928).

[1] P. Klein and P. Stamberger, *Kolloid-Z.* **35**, 362.
[2] *Kolloid-Z.* **42**, 295.
[3] P. Klein and P. Stamberger, *loc cit.* p. 366.
[4] J. R. Katz, *Ergebnisse der exakten Naturwissenschaften* Bd. **III** *and* **IV**; H. Freundlich, *Kapillarchemie.*
[5] The experiments carried out in saturated solvent vapor lay no claim to accuracy as grave errors, as much as 50 per cent, are introduced due to the methods employed. However, the experiment worked well with benzene containing 5 per cent triolein, the vapor pressure being close to that of the pure solvent.
[6] *Kolloid-Z.* **35**, 365.
[7] In the determinations in vapor great sensitivity to temperature was shown.
[8] The maximum swelling of dead-milled rubber could be determined only

roughly, as the swelling is unlimited. If one places a semi-permeable membrane between the substance and the liquid, the liquid is attracted by osmotic pressure, due to the tendency of the rubber to go into solution. Therefore, the following procedure was adopted. The rubber was placed in a graduated cylinder containing the solvent, and the point at which no further increase in the volume of the gel could be noticed was taken as the point of maximum swelling. After some time the gel was shown to decrease in volume due to diffusion. The results may be reproduced in this way with various weights.

It seems rather peculiar to speak of the maximum swelling of a substance of unlimited swelling power. The terms "limited" and "unlimited" swelling power are not applicable to most elastic gels, and therefore are to be considered as applying only relatively. The maximum increase in volume or weight either in the liquid or in the vapor is taken as the point of maximum swelling, calculated on a volume basis. This increase takes place in substances of "limited" as well as of "unlimited" swelling power. But on reaching this point in the latter case, the dissolution effect is so great (due to the diffusion of the gel structure in the liquid) that in determining the extent of swelling the results are vitiated. In the first case this effect is clearly noticeable in very many gels, such as gelatin, unmilled rubber, etc., only after a much longer time, in fact months. This behavior, which is closely related to swelling, will be considered later. Therefore it seems justifiable to speak of the point of maximum swelling of substances of "unlimited" as well as those of "limited" swelling power.

[9] *Kolloidchem. Beihefte* **13**, 43 (1921).
[10] *Colloid Symposium Monograph*, **IV**, 58.

Celite in Rubber Compounds

The Bureau of Standards has announced that the Celite Products Company of Los Angeles, Cal., has established a fellowship at the bureau to investigate the properties which the various grades of Celite impart to vulcanized compounded rubber. It is understood that it will be several months before a report will be ready for distribution.

Safety Hazards in Rubber Compounding

THE National Safety Council has recently compiled a series of reports on the classification and health hazards of compounding materials used in the rubber industry. The first of this series on accelerators and dry organic compounds is now available in pamphlet form and will shortly be followed by others.

The substance of the report was first presented at the rubber section meeting of the Sixteenth Annual Safety Congress, held at Chicago, 1927, by L. J. D. Healy, technical superintendent of the Fisk Rubber Company, Cudahy, Wis.

Among the large number and types of compounding materials used in the rubber manufacturing industry there are a considerable number which are dangerous to the health of those handling them unless precautionary measures are taken. There are others about which comparatively little is known. With the increasing use of organic substances there is the ever present danger of health hazard unless the toxic and irritating properties of these materials are recognized.

The National Safety Council, therefore, has made the following general classifications of these substances with reference to their relative toxicity. The pamphlet also carries a brief description of the toxic qualities of each material.

RELATIVE TOXICITY OF VARIOUS RUBBER COMPOUNDING MATERIALS

Highly Toxic or Irritant

Aniline
Hexamethylene-tetramine
Ortho-toluidine
Para-phenylene-diamine
Para-toluidine

No Hazards With Proper Handling

Aldehyde ammonia
Diortho-tolyl-thiourea
Heptaldehyde aniline
Methylene diphenyl diamine
Thiocarbanilide

Slightly Toxic or Irritant

Alpha-naphthylamine
Beta naphthylamine
Methylene aniline

No Hazards

Dimethylammonium - dimethyldithiocarbamate
Diortho tolyl guanidine
Diphenyl-guanidine
Ethylidene aniline
Mercapto-benzo-thiazole
Piperidonium pentamethylenedithiocarbamate

The National Safety Council calls attention to the growing tendency among manufacturers of chemicals to place new rubber accelerators and compounding ingredients upon the market under trade names and urges the manufacturer in such cases to explain any dangerous toxic qualities such materials might have or guaranteeing them to be free from such qualities.

Until very recently there has been a lack of any compilation of definite data on this phase of the industry and at best, the information has been widely scattered and meager in detail. In a few outstanding instances the ground has been very well covered especially in the handling of lead compounds and benzol. The splendid work done jointly by the rubber and chemical sections of the National Safety Council on benzol is an excellent example of what can be done to educate the manufacturer in the proper handling of these chemicals so as to prevent injury of those using them.

Other pamphlets of the series to be published by the National Safety Council will include studies on dry inorganic compounds; gums, resinous materials and waxes; and liquids and gases.

In connection with this subject and the recent activities of the National Safety Council along these lines, attention is called to an article published in the October 25, 1927, issue of THE RUBBER AGE on "Health Hazards of Compounding Ingredients" by J. Newton Shirley, of the Hood Rubber Company, Watertown, Mass.

Stocks Containing Gastex Black

DURING the past month the commercial production of Gastex carbon has been started by the General Atlas Chemical Company in their plant at Pampa, Texas. The Grasselli Chemical Company, who have supplied the following information, are the exclusive sales agents for this carbon. This black, which is manufactured from natural gas by incomplete combustion in a special type of apparatus, has nearly twice the apparent density of standard channel blacks, and for this reason is said to be easier to mill in rubber and to air-float less. The actual specific gravity is 1.82 as compared to 1.76 for channel black.

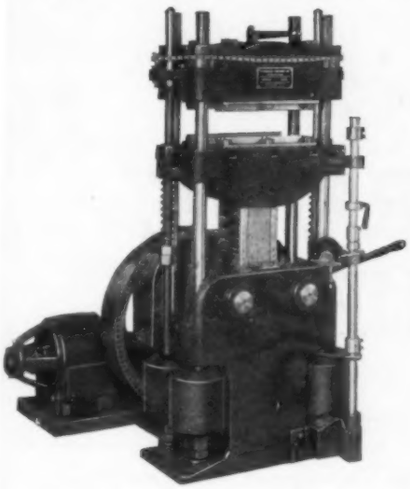
The rate of cure of rubber compounds containing Gastex is somewhat different from those containing standard channel blacks, and for that reason requires slight changes in formulae and in cure. For example, in a standard tread formula containing 25 to 40 parts of black per hundred of rubber, 5 parts zinc oxide, 4 of stearic acid, 3 of pine tar, 3.5 of sulphur, and 1.5 of DPG, the optimum cure of a standard carbon black is obtained in ninety minutes, while that of the Gastex stock would be reached in seventy-five minutes. The stocks containing Gastex have a higher modulus at intermediate elongations, but a somewhat lower tensile at break than the standard channel black stocks.

The abrasion resistance of Gastex stocks when unaged is lower than those of the standard channel blacks, but owing to the superior ageing characteristics of this carbon, this difference is said to be overcome in a short time. Comparative tests on the Grasselli Abrader have shown that freshly cured standard channel black in a grade A tread will give a loss of 200 cc. per H. P. H., while the same stock containing Gastex will give a loss of 230 cc. After ageing these two stocks for four days in the Geer oven at 70° C. the resistance to abrasion are 308 and 300 cc. respectively. This data shows that Gastex is a reinforcing carbon and not an inert filler. This material is being used at present by several of the larger rubber companies and is being tested by a number of others.

Its producers summarize the advantages of Gastex as follows: Low moisture content, high resistance to abrasion, high specific gravity, uniformity, ease of milling, fast rate of cure, good ageing, low hysteresis loss and low cost.

New Equipment for Rubber Factories

New Mechanical Mold Press



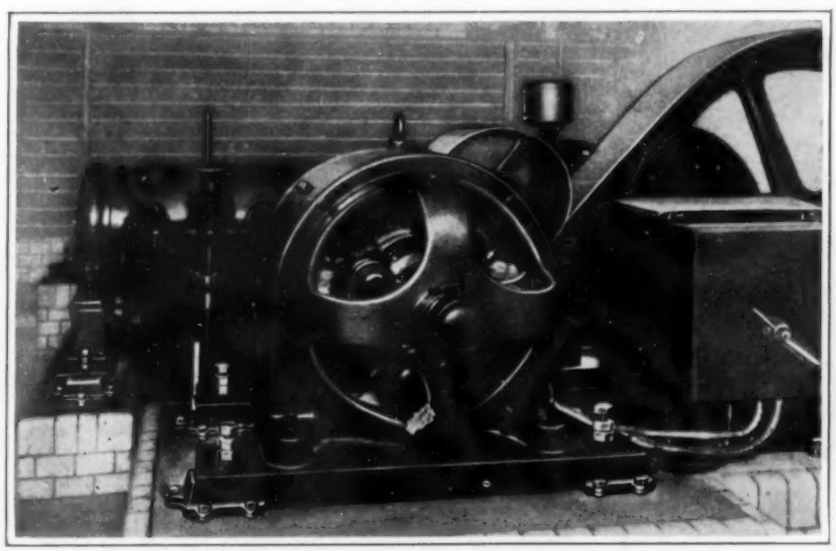
A NEW type of mechanical spring press has been introduced by the Terkelsen Machine Company, Boston, Mass., which is adaptable as a molding press in rubber factories. Its principle is the old rack and pinion arbor press, power driven and equipped with mechanical means for controlling the length of the stroke, rate of travel of the ram and the amount of pressure applied to the work.

Hand or plain molds may be used but it is recommended by the manufacturers that the press be used as a semi-automatic unit. Its source of power is an electric motor operating through a train of gears to a rack pressed into the lower bed. The motion of this bed brings into action four powerful springs acting as an "accumulator" and which maintain the pressure and follows up the physical changes in the curing process. These springs are mounted in cylinders shown at the bottom of the press. While the springs are maintaining this pressure during the curing period the motor is not being used. The purpose of the motor is simply to close the press and open it.

The stroke of the press is instantly adjustable to any length. The pressure stroke of the ram travels at two speeds, namely, a fast approach to the point where the material is to begin receiving pressure and is then automatically thrown into a low speed while exerting pressure. After the curing period, the operator starts the press on its downward motion and the pieces are automatically ejected.

"Korfund" Vibration and Noise Damper

THE vibration damper illustrated below is designed to be placed under machine bases to deaden the vibration and noises and to protect machinery from the effects of high frequency vibrations. It is manufactured by the Korfund Company, Inc., New York City. According to its producers this damper is built to sustain loads of 30 to 40,000 pounds. The outer housing rests on a base plate to which it is securely bolted. The inner walls are completely covered with an isolated material which is adjustable in the larger sizes. Thus the spring casing supporting the machine is resiliently separated from the housing and foundation under the damper. The spring casing encloses one or more springs, the tension of which can be adjusted easily by means of the same bolt which holds the machine base to the spring casing. The height of the damper is not affected by the spring adjustment.



Compressor Isolated with "Korfund" Vibre-Dampers

Automatic Tire Changer

A new automatic tire changer, now being marketed by the Manley Manufacturing Company, York, Pa., is equipped to handle the largest sizes of pneumatic tires, both high pressure and balloon. It also handles disc and wire wheels and solid rims. The operation of the machine is designed along the lines of the familiar Manley worm and sector and toggle principle. The worm and sector make the operation fast and the toggle provides a constantly increasing pressure, so that the further the jaws are expanded, the greater the power exerted.

The automatic jaws are so arranged so

that the greater the pull the tighter the jaws grip and when the pressure is released the jaws automatically disengage, so that the rim may be lifted off. The manufacturers claim that this type of tire changer is the only one that will satisfactorily handle the three piece rims of the Firestone type. There is also a rack and pinion attachment for the machine for stripping tires from solid rims, disc or wire wheels.

Laboratory Calender

A new three-roll laboratory size calender with motor drive has recently been designed by Joseph Robinson and Co., Ltd., Manchester, England. The rolls are 18 inches wide and 6 inches in diameter, with provisions made for heating and cooling. The bearings for each roll are adjustable vertically by square thread screws actuated by worm gears enclosed in the frames. The worms can be actuated independently or simultaneously.

The bed plate extension carries a double helical reduction gear, the high speed shaft of which is fitted with a flexible coupling to the SHP motor. The middle roll is driven from a low speed shaft connected to the reduction unit, the rolls being geared together by a set of roll end enclosed pinions. The top roll is operated at an even speed and the bottom roll can be operated at variable speeds. This speed changeover is made by means of a hand wheel actuating the pinions by a slide bar.

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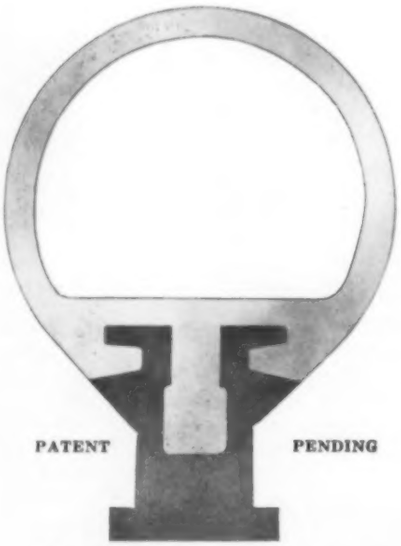

The heavy shaded portion in the above illustration shows the steel tongue casting which means a steel trimming line, elimination of breakage and wear. Cast steel fittings for automatic chucks, clamping rings or other parts.

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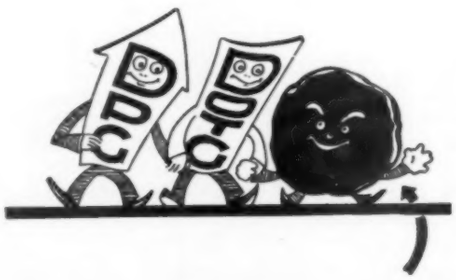

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EDITORIAL COMMENT

Mr. Hoover's Nomination

WITH the decision of the Republican National Convention now made in favor of Herbert C. Hoover for the presidency of the United States the rubber industry has an opportunity of seeing in the highest post of the nation a man particularly sensitive to its problems. There is no man in public life today so intimately cognizant of the rubber manufacturing and crude rubber growing industries, as affecting the United States, as the present Republican nominee.

Being the internationalist he is, Mr. Hoover became deeply interested in rubber immediately that commodity developed a broad international problem. Agitated by the restrictions imposed by Great Britain in 1922 on the free exportation of crude rubber, he fought an energetic and none too popular fight against the Stevenson Scheme. Through his efforts Congress was induced to appropriate a total of several hundred thousand dollars for research to determine the practicality of growing rubber in new areas where there would be no British or other governmental restrictions on shipments. That no wholesale attempt at the private cultivation of rubber developed as a result of Mr. Hoover's surveys is not the fault of his efforts but is rather due to the unfavorable conditions which have surrounded possible developments in the potential areas.

When the British over-reached themselves in the matter of rubber prices in 1925 it was Mr. Hoover who capitalized on the situation in so effective a manner that it was not forgotten until the restriction policy has actually been abandoned. By advocating the conservation of rubber and the greater use of reclaimed rubber as an antidote for the restrictive British legislation and using his influence to see that such a policy received adequate publicity throughout the country he was able to demonstrate the power of the final consumer in no uncertain way.

That Mr. Hoover's interest in rubber's international problem has never lagged is indicated by his support of the Newton bill in the last Congress which would have cleared up any doubt of the legality of the rubber purchasing pool, a development about which he kept at all times fully informed. Various divisions of the Commerce Department, under his control, have kept constantly and helpfully in touch with the rubber industry in its narrower aspects.

It is accordingly most logical that the rubber industry should find in Mr. Hoover the highest qualified expert for its problems and this fact was no doubt what prompted Mr. Litchfield, president of the Rubber Association of America, to telegraph Mr. Hoover on the occasion of his nomination the earnest felicitations and congratulations of the rubber industry.

The Tire Price Cut

NOW that the tire price reduction, so long awaited by the public following the decrease in the price of crude rubber, has been made, the tire trade is certainly entitled to a brisk demand. To a slow spring has been added the difficulties of a price readjustment made necessary by more fluctuations in the price of rubber. As usual, the tire manufacturers have been required to revise their prices downward before their raw material costs have justified it. The public hesitation to purchase tires after a drop in the price of crude rubber has received publicity has again had the effect of ruining what should have been a good financial year for the manufacturers.

The record for tire production which is said to have been set in May was more the result of a desire to get the high-priced rubber into finished goods than due to active demand for the tires. Inventories are now high and the goods represent greater investments in raw materials that can be gotten for them under the new price schedules.

At the beginning of the year it appeared that crude rubber prices would remain firm and perhaps advance slightly from month to month. The manufacturers appeared to be safe in the commitments which they had had to make. The predictions for a prosperous 1928 disappeared, however, the day the British government began its analysis of rubber restriction and the possibility for any reasonable profit became remote when the cancellation of the legislation carried rubber prices to still lower ground. The rubber industry can only be felicitated on holding off the price reduction as long as it did.

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Editor.....P. L. Palmerton
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NEWS of the INDUSTRY

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CHURCH NEW GOODRICH FOOTWEAR SALES HEAD

Leaves Goodyear Rubber Company to Succeed J. A. Rishel—Has Been Prominent in Rubber Footwear Trade for Many Years.

THE B. F. Goodrich Company, Akron, recently announced the resignation of J. A. Rishel as sales manager of the footwear department and the appointment to succeed him of Frank E. Church, formerly president of the Goodyear Rubber Company of Middletown, Connecticut.

Mr. Church has long been a prominent figure in the rubber footwear business, having started his career in 1907 with the Northern Shoe Company of Duluth, Minn. From 1915 to 1919 he was vice-president and general manager of the company. He was later manager of the St. Paul branch of the United States Rubber Company and in 1921 became president of the Beacon Falls Rubber Company, Beacon Falls, Conn., but returned to the United States Rubber Company in 1924 as manager of footwear sales, with headquarters in New York City.

In 1927 Mr. Church severed his connection with the United States Rubber Company and acquired a controlling interest in the Goodyear Rubber Company, at Middletown, Connecticut, manufacturers of "Goldseal" rubber footwear, and its subsidiary, the Lambertville Rubber Company, of Lambertville, N. J., manufacturers of "Snag Proof" footwear. He was elected president of both companies.

Middletown Plant Closed

Recently the Lambertville plant was closed and the machinery transferred to the Middletown plant and within the last few weeks lack of business is reported to have made it necessary to close the Middletown factory also.

Mr. Rishel, whom Mr. Church succeeds, has made no statement as to his future plans. His services within the rubber manufacturing industry covers a period of 27 years, fifteen of which have been spent in the employ of the Goodrich Company. Much of the success of the Goodrich business is attributed to Mr. Rishel and under his management his department had grown to third in importance and volume of sales within the organization of the company. He is also considered in a large measure responsible for the great success attendant on the introduction of the "zipper boot," an innovation in the rubber footwear trade.

McClaren Sales Gain

Sales of the McClaren Rubber Company, Charlotte, N. C., are reported to show a gain of 14.9 per cent during the first five months of the current year over the corresponding period of last year, according to a recent statement by Charles R. Collins, vice-president and general manager. The number of distributors of the company have also been increased 18 per cent since the first of the year. The McClaren factory is running at a greater capacity than ever before and the installation of new machinery which is planned will increase the production about 14 per cent.

F. E. CHURCH

URGES STUDY OF FATAL STORM AT BALLOON RACES

P. W. Litchfield, president of the Goodyear Tire & Rubber Company, and donor of the trophy competed for in the recent national balloon races, has urged the National Aeronautical Association to make a special study of the meteorological conditions surrounding the electrical storm of May 30 last which cost the lives of two balloonists.

Officials said that prior to the start in Pittsburgh, weather conditions were good. Slight disturbances were indicated, but nothing to approach the magnitude of the storm which caused 11 pilots to make forced landings.

Mr. Litchfield suggested that representatives of the army, navy, weather bureau and the competing pilots themselves meet to review the weather maps of that day and the logs and barographs of all pilots, supplemented by complete reports from them so as to get all the information possible.

MAY CONSUMPTION SETS NEW RECORD

Absorption of Crude Rubber by Industry in United States Beats All Previous Records—Totals 37,333 Tons —Stocks on Hand Decline.

THE consumption of crude rubber in the United States during May broke all previous records in the history of the industry and reached a grand total of 37,333 tons. This was approximately 1,200 tons over the best previous month, which was March, 1923. The total consumption for the first five months of the current year has climbed to 173,958 tons, as compared with 168,221 tons for the corresponding period of last year.

In contrast to the heavy rate of absorption within the industry, the imports of crude rubber fell off sharply during May and totaled only 32,883 tons, as compared with 37,240 tons in April. This low volume of arrivals brought the total of all crude rubber imports for the five months' period down to 178,056 tons, or approximately 5,400 tons less than the total for the same period of last year.

The drop in arrivals and the high consumption resulted in a decline in stocks on hand to 105,356 tons, but the tonnage afloat to the United States, totaling 34,374 tons, brought the total of rubber in sight back to 139,730 tons or slightly less than 8,000 tons below the April figure.

Production at High Levels

Preliminary reports from factories so far this month indicate that production is being maintained at near maximum capacity levels and gives credence to the rumor that June will establish another consumption record.

The consumption of reclaimed rubber during May totaled 17,746 tons, representing 47.5 per cent of the total crude used as against 51.6 per cent during April. This decline in the use of reclaimed is probably due to the lower prices in the rubber market, which has caused some manufacturers to buy crude in substitution for reclaimed rubber.

The various grades of crude rubber imported during May, as compared with arrivals during the same month last year and April of this year, as reported by the Rubber Association of America, are shown in the table given below:

	May 1927	May 1928	April 1928
Plantations	33,735	31,564	36,108
Paras	1,872	849	573
Africans	197	14	15
Centrals	399	5	20
Guayule	364	451	524
Manicoba and Matto Grosso	2	.....	.....
	36,569	32,883	37,240

GOODYEAR ENTERS BAG IN INTERNATIONAL RACE

The Goodyear Tire & Rubber Company have announced that Clarence Palmer and J. W. Mell, the American Club balloonists who attained second place in the national balloon races from Pittsburgh on May 30, will pilot the 80,000 cubic foot racing balloon of the company at the international Gordon Bennett cup races scheduled to start from Detroit on June 30.

Fifteen balloons, representing France, Belgium, Germany, Italy, Switzerland, Denmark, Argentine and the United States have been entered for the event. The bag which Messrs. Palmer and Mell will pilot is the one which had been constructed for the use of Van Orman and the late Walter W. Morton, in the event they had been successful in winning the national contest.

In view of the tragic ending of the previous event the officials of the National Aeronautical Association have adopted a ruling that the international race will not be started in the event any storm is forecast.

Samson Expansion Continues

The Samson Tire & Rubber Corporation, Compton, Cal., has celebrated its twenty-fifth anniversary by taking over a large two-story building adjacent to the plant which they will occupy as an additional warehouse and office. The company has been expanding steadily during the last few years and record sales so far this year are reported. The moving of the office force and warehouse space to the new building will permit of greater production of tires and tubes in the factory proper.

Murray Loses Suit

The suit of the Murray Rubber Company against Mercer County, New Jersey, to recover $166,018.55 for damages alleged to have been sustained by water flooding the plant of the concern has been non-suited by Judge A. Dayton Oliphant, in the Mercer County Court. C. Edward Murray, Jr., president of the Murray Company, testified that faulty bridges maintained by the Board of Freeholders over Assunpink Creek were responsible for water entering the rubber plant. The court maintained that the county was only responsible for bridges which it actually built.

RUBBER ASSOCIATION FELICITATES HOOVER

Following the action of the Republican National Convention in nominating Herbert Hoover for the presidency of the United States, P. W. Litchfield, president of the Rubber Association of America, Inc., sent the following telegram of congratulations to Mr. Hoover at Washington:

"The officers and directors of the Rubber Association wish to extend the hearty congratulations of the rubber industry on your nomination for the presidency. We believe your nomination and election will assure the continuance of sound, constructive policies for business and the public."

Chemical Firm Changes Name

The name of the Industrial Chemical Company, 200 Fifth Avenue, New York City, was recently changed to Industrial Chemical Sales Company, Inc., according to an announcement made by Noel Statham, president of the concern. No changes in personnel or management were made. The company handles Alba whiting in addition to a general line of industrial chemicals. J. M. Wafer is in charge of sales to the rubber industry.

Delegates to the mechanical conference of the American Publishers' Association, which convened recently in Cleveland, were guests of the B. F. Goodrich Company at Akron and made a tour of inspection through the company's plants.

SHOE REPAIRERS AND DEALERS HOLD EXHIBIT

The National Shoe Repairers' and Dealers' Exposition was held at Mechanics Building, Boston, June 7, 8 and 9. Through the holding of this three-day exhibition, the first of its kind ever projected on a large scale in this country, an opportunity was afforded to inspect the latest developments in shoe machinery, shoe repair shop furnishings and equipment, hat and clothes cleaning apparatus, sole leather, rubber heels and soles, and findings of all kinds. There were a number of working exhibits of shoe machinery, shoe repair contests for speed and quality workmanship, shoe repair advertising competition, model repair shops in operation, and a prize was awarded to the shoe repairer who came from the most distant city. Business meetings were held and entertainment was furnished.

During the business sessions the formation of a National Shoe Repair Organization was discussed. Ultimately it was voted to postpone action on the matter of a National Association until the next meeting.

While the majority of the exhibits were shoe repair machinery, furnishings, equipment and sole leather, there were several displays of rubber products and appliances.

The rubber industry was represented by the following companies: Hood Rubber Products Company, Watertown, Mass., the Hood suprex heel; Collieson Brothers, Boston, Mass., rubber heels and findings; Balloon Rubber Heel Company, Beverly, Mass., rubber heels and composition soles; Panco Rubber Company, Chelsea, Mass., rubber heels, composition soles and top lifting material; Quabaug Rubber Company, North Brookfield, Mass., rubber heels, composition and top lifting material; Travelite Rubber Company, Boston, Mass., rubber heels; I. T. S. Rubber Company, Elyria, Ohio, rubber heels; W. J. Young Machinery Company, Lynn, Mass., rubber dieing-out machine and power brushes; Hamlin Machine Company, Lynn, Mass., Economy McKay sewer.

U. S. Rubber Assumes Control of Winnsboro

The arrangement under which Lockwood, Greene & Company have managed the Winnsboro Mills of the United States Rubber Company, at Winnsboro, N. C., was terminated on June 1 and the operation of the mills in the future will be under the direct control of the United States Rubber Company. The mills manufacture the cord used in United States tires.

Lockwood, Greene & Company, who have been managers of the mills since 1917, are discontinuing their management department and the contract arrangement was terminated at their request. C. B. Seger, president and chairman of the United States Rubber Company is also president of the Winnsboro Mills. It is expected that the requirements of the rubber company will make it necessary to continue the operation of the mills at maximum capacity.

Winnsboro Mills of the United States Rubber Company, Winnsboro, N. C.

GENERAL ADDS TWO NEW TIRES TO REGULAR LINE

The General Tire & Rubber Company, Akron, has announced two additions to its line of passenger and truck tires. The new General center grip balloon tire is designed for Fords and other light automobiles and is slightly smaller than the usual General tire for this grade of car. It more nearly resembles the factory equipment tires used. The new truck tire is a heavy hauling tire for service on bad roads. It is claimed to have 20 per cent more traction power and is designed to pull trucks through sand and mud such as is encountered in oil fields and lumber camps.

The Converse Rubber Shoe Company, Malden, Mass., closed its rubber shoe department from June 5 to July 2 and the tennis shoe department from June 16 to July 2, in order to allow for the usual summer vacation periods.

LOUISIANA MAY TAX CARBON BLACK PLANTS

The legislature of the state of Louisiana has before it a bill imposing a tax of 4/10th of a cent per pound on the production of carbon black. The measure has been favorably reported out of committee but will face considerable opposition as it is felt that such a tax will be a decided blow to local manufacturers. The carbon black industry in the state is in none too healthy a condition and there has been an increasing movement on the part of producers to move westward into the Texas fields. Another legislative measure which is being favorably considered, however, and which is of special interest to the manufacturers of carbon black is the proposed reduction in the tax on natural gas production from 1½ cents per thousand cubic feet to 1/5th of a cent.

Export Offices Moved

The head offices of the Fisk Tire Export Company were removed on June 15 from 250 West 57th St., New York City, to the Fisk factory at Chicopee Falls, Mass. They had been at the New York City address for several years since the separate incorporation of the export company.

A. C. Walker, head of the export company, will return soon from a trip to South America where he has been visiting several of the company's distributors. C. Reed Hill is in charge of the office in Mr. Walker's absence. Paul H. Davis, who was recently appointed to represent the company in Europe, has established headquarters in Antwerp.

U. S. Rubber Has Outing

The members of the U. S. Rubber Club, composed of employees of the United States Rubber Company, New York City, enjoyed their fourth annual outing on June 19. The day was given over to a trip up the Hudson River to Indian Point on the steamer "Peter Stuyvesant," which was chartered for the occasion. Athletic, music and entertainment committees arranged an elaborate program and in spite of the overcast skies and an occasional shower, a very pleasant time was had by all.

William J. Slater

William J. Slater, southern district sales manager of the Miller Rubber Company, died at the company's hospital at Akron on June 6, following a severe heart attack. He had been with the Miller organization for the last five years and prior to that had been connected with the Firestone Tire and Rubber Company. He came to Akron in 1914 from Kalamazoo, Michigan. He was 48 years of age.

To Study Tropical Forests

H. S. Firestone, president of the Firestone Tire & Rubber Company, is sponsoring the trip of investigation which will be made by Professor Samuel J. Record, of the Yale School of Forestry, to study the forest resources of the tropics, particularly in western Africa. The investigation has no direct bearing upon the rubber industry or the rubber plantation project of Mr. Firestone in Liberia, although Professor Record stated that the trip had been suggested as a result of various problems arising out of the extensive planting operations now under way in that region.

DR. E. H. GRAFTON JOINS KENYON ORGANIZATION

Dr. E. H. Grafton has recently associated himself with the C. Kenyon Company, Inc., and Vulcan Proofing Company of Brooklyn, New York, as technical superintendent and will, in the future, be responsible for all

DR. E. H. GRAFTON

material specifications, control, development, research and methods of processing.

Dr. Grafton, for the past two and one-half years, was technical superintendent of the Murray Rubber Company of Trenton, N. J., and previous to that connection, held a similar position with the Quaker City Rubber Company of Philadelphia.

He comes to the Kenyon company with a wide experience in rubber technology. His academic training was acquired at Buchtel College, Akron, Ohio, the University of Pennsylvania, and the University of Chicago. His early experience and training in the technology of rubber was at Akron University where he took the course in the Chemistry of Rubber leading to an M.S. degree, and served later as an instructor in the same course. He was also engaged at the Goodyear Tire & Rubber Co., Akron, on special analytical and compounding problems and the Manhattan Rubber Mfg. Co., Passaic, on development and introduction in factory practice of organic accelerators.

While at the Quaker City Rubber Company he succeeded in interesting the National Aniline Company in the manufacture of substituted guanidines and placed orders for a portion of the first lots of TPG and DPG manufactured by them.

It was in the laboratory of the Quaker City Rubber Company that Winfield Scott in September, 1920, working under Dr. Grafton, conceived the possibilities of DOTG as an accelerator, demonstrating by physical tests and cures its uses and advantages.

Dr. Grafton is Chairman of the Mechanical Goods Specification Committee of the Rubber Association of America and Secretary of Committee D-11 of Rubber Products of the American Society for Testing Materials.

WASTE MATERIAL DEALERS MEET IN WILMINGTON

The organization meeting of the salvage division of the National Association of Waste Material Dealers, Inc., and a conference on its aims and purposes were held in Wilmington, Delaware, June 6-7. There were represented at the conference approximately fifty of the largest industrial and public utility corporations in the United States, some representatives coming from as far away as Texas. The meetings were held in Wilmington upon invitation of the duPont Company, who acted as hosts not only at the various meetings but also at the dinner which was given at the duPont Biltmore Hotel on Wednesday evening, June 6th. R. W. Phillips, manager of the salvage and reclamation division of the duPont Company, was elected as the first chairman of the newly formed salvage division. The number at the session including those from the duPont Company, was close to 100. The scrap rubber trade was well represented among the association members in attendance.

As a result of the conference, those interested are confident that the salvage division is going to make rapid strides, and plans are already under way for the operation of a clearing house through which members may dispose of surplus supplies and inactive or obsolete equipment.

N. A. C. C. Elects Macauley

At the annual meeting of the National Automobile Chamber of Commerce held recently in New York, Alvan Macauley, president of the Packard Motor Car Company, was elected president for the ensuing year, succeeding Roy D. Chapin, chairman of the Hudson Motor Car Company. The post of first vice-president, which was held last year by Mr. Macauley, will be filled by Alfred H. Swayne, of the General Motors Corporation.

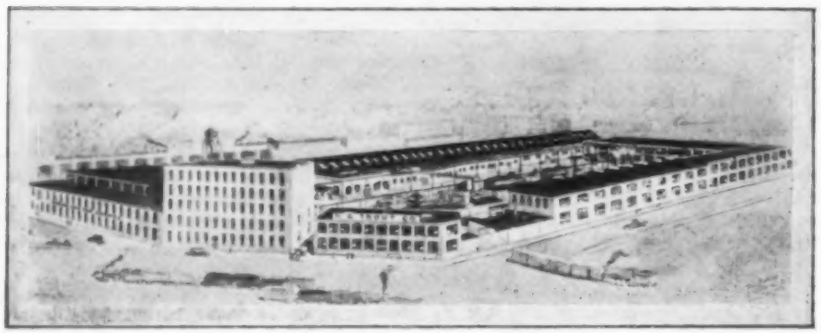
The new vice-president of the passenger car division is A. R. Erskine of Studebaker, who has been secretary of the N. A. C. C. A. J. Brosseau of Mack Trucks, was re-elected vice-president commercial car division. H. H. Rice of Chevrolet, was re-elected treasurer. John N. Willys of Willys-Overland was elected secretary. Alfred Reeves was re-elected general manager.

Mason Tire & Rubber Company will establish salesrooms and warehouses in Boston at 41 Lansdowne Street. The property has been recently acquired on a long-term lease.

Production at the rate of 600 tires per day is being maintained at the Triangle Tire & Rubber Company, at Canton, O., according to a recent statement from M. C. Wyatt, general manager of the plant. Two shifts are being employed and a third will be started shortly when production will be further increased.

The Seiberling Rubber Company, Akron, O., is constructing a new warehouse near the main factory at a cost of $110,000. Ground has already been broken for the structure and the erection will be rushed.

Equipment Company Plans Wide Expansion



WITH the recent appointment of D. S. Secord as vice-president and general manager, the H. G. Trout Company, Buffalo, N. Y., manufacturers of vacuum drying apparatus and other chemical machinery, are planning a marked development and expansion of its manufacturing and sales facilities.

This company manufactures a line of vacuum dryers, pumps, vulcanizers, autoclaves, recovery apparatus, mixing kettles and also furnishes iron, semisteel and bronze castings in addition to handling special machine work. It was originally established in 1844 as the Shepard Iron Works and changed its name to the H. G. Trout Company in 1872.

In addition to the appointment of Mr. Secord, John H. McFarlin, formerly of the J. P. Devine Co., has been appointed sales engineer. Other additions to the company's staff are A. J. Secord and Jack Secord, sons of the general manager. R. C. Waldo is president.

The Alberger Chemical Machinery Company, 103 Park Ave., New York City, are acting as local representatives of the Trout Company.

NO SATURDAY CLOSINGS FOR RUBBER EXCHANGE

The board of governors of the Rubber Exchange of New York recently decided against closing the exchange on Saturdays during July and August. A number of members had signed a petition asking that a vote be taken on the question. Denying the request, the board said:

"The board of governors has decided that the interests of the members and their customers could not be properly served if the opportunity of buying or selling were denied them on Saturdays. With the markets abroad open on Saturday, a condition might arise whereby an operator would have just cause for complaint if he were denied the opportunity for acquiring or disposing of rubber between the hours of ten and twelve on Saturdays. Under these circumstances, the request is respectfully refused."

A. C. S. Institute Lectures

Among the lectures planned during the sessions of the American Chemical Society Institute to be held between July 23 and August 18 at Northwestern University, Evanston, Ill., there will be at least two scheduled talks of interest to rubber technologists. W. L. Semon, of the B. F. Goodrich Company to lecture on antioxidants and Thomas Midgley, Jr., will talk on the recent developments in synthetic rubber.

Gets Conveyor Contract

The Manhattan Rubber Manufacturing Company, Passaic, N. J., has been awarded the contract to supply the conveyor belting on the stupendous engineering project of erecting the suspension bridge which will connect New Jersey and New York. The bridge will be connected with the Palisades on the New Jersey side and to a huge concrete block on the New York City. This concrete cliff will weigh 206,000 tons and will be the largest block of concrete ever cast. The conveyor belt which is to be supplied by the Manhattan Rubber Manufacturing Company will be for conveying of the mixed concrete in the building of this concrete cliff.

Race Tire on Display

The Firestone tires which were on the Miller Special when it won the 500-mile Memorial Day automobile race at Indianapolis have recently been put on display with Firestone dealers. The winning speed this year was 99.482 miles per hour. Louis Meyer was the victorious driver.

U. S. RUBBER INCREASES GROUP INSURANCE PLAN

After two years of successful experience with group insurance for its salaried employees, the United States Rubber Company has extended the privileges of this form of insurance to its wage employees. On May 1, the amount of insurance in force was $17,561,000.

The total insurance now in force is $36,249,500, and protects 26,227 employees of the United States Rubber Company located throughout the world. The increase is accounted for by $13,786,000 granted to wage employees and $4,902,000 additional insurance granted to salaried employees under a new system of allotment.

This is one of the first dozen policies in size in existence, and it ranks with the first in the number of persons insured. During the past two year period under Equitable Group Insurance, a total of $218,000 has been paid in claims; $179,500 for 102 death claims, and $38,500 for 18 total disability claims.

Participation in the Equitable Group Insurance Plan is entirely voluntary on the part of the employees. Among the salaried employees, 92.9% of those eligible are carrying the insurance; among the wage employees 88% of those eligible are protected. The insurance may be carried by salaried employees in amounts up to $10,000, the size of the policy being determined by the salary received. Among the wage employees the amount is $1000 for male wage employees and $500 for female wage employees.

AKRON RUBBER FIRMS SEEK TICKER SERVICE

Six brokerage houses dealing in crude rubber or rubber company stocks and four rubber manufacturing companies in the Akron district have made application to the Rubber Exchange of New York for the installation of exchange tickers and the furnishing of daily quotations of the rubber market.

The brokerage houses making the request were: Harriss, Irby & Vose; Herron, Rodenbaugh & Meyer; H. W. French Company; Meyer & Brown; C. T. Wilson and Company and Prince & Whitely. The rubber companies applying were: B. F. Goodrich Company; General Tire & Rubber Company; Goodyear Tire & Rubber Company and the Miller Rubber Company.

Quotations from the New York exchange will be printed on the tickers in Akron within six or seven seconds after the transactions are made on the trading floor of the exchange in New York.

Continental to Close Plants

The authorization of the Mexican government is reported to have been granted to the Continental Rubber Company to suspend work in its guayule plants in the states of Coahuila and Zacatecas. The authorization is said to contain the provision that the oldest employees shall be retained as caretakers and that all the employees shall have preference in employment when the plants resume operations.

The Buffalo Foundry and Machine Company, Buffalo, N. Y., have recently opened a San Francisco office in charge of Charles O. Lavett. The company manufactures dryers, evaporators, chemical equipment and various other machinery applicable to rubber factories.

The Millville, Mass., and Woonsocket plants of the United States Rubber Company will close July 23 to August 6 for making necessary repairs at the factories. About 2000 employees will be affected by the shut-down.

The United States Rubber Company's General Laboratories, located now in Passaic, N. J., will close down for two weeks from August 4 to 20, for the regular two-weeks vacation period.

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Names in the News

EARL L. DAVIES has been appointed vice-president of the Samson Tire & Rubber Corporation, Los Angeles, and will be in charge of manufacturing. Mr. Davies' promotion after many years of service was recently celebrated by a testimonial dinner tendered him by a group of his friends in the industry.

HARVEY S. FIRESTONE, president of the Firestone Tire & Rubber Company, and his four sons, attended the Republican National Convention at Kansas City. During their visit his sons competed, as a team, in a polo match, which was one of the entertainments of the convention.

E. H. KIDDER, formerly vice-president and general sales manager of the Dunlop Rubber Company, has been made vice-president of the Boston Hupmobile Company and will have charge of wholesale distribution.

H. H. HARRIMAN has been appointed Ohio representative of *Tires* magazine and will have offices in Akron. For the past few years, Mr. Harriman has been connected with the *India Rubber and Tire Review* as associate editor. He has also served on the editorial staff of the *Akron Press*.

D. M. MATTHEWS, professor of forest management at the University of Michigan, who has charge of the rubber planting courses given at that school, will spend the summer handling special forestry problems in Cuba.

J. J. BLANDIN, manager of the crude rubbed department of the Goodyear Tire and Rubber Company, has left for a tour of investigation of the Company's rubber plantation properties in the Orient.

HARVEY WILLSON, assistant general manager of the Rubber Association of America, returned recently from a two weeks' trip among Middle Western rubber companies.

H. STUART HOTCHKISS, chairman of the board of directors of the General Rubber Company, returned on June 13 from a trip to Europe. While he was away he also visited Liberia where he inspected the Firestone plantation properties.

HARLAN A. DEPEW, of the research division of the New Jersey Zinc Company, Palmerton, Pa., will present a paper on the "Difficulties in Abrasion Testing of Rubber" at the meeting of the American Society for Testing Materials to be held in Atlantic City, N. J., June 25 to 29.

N. G. BRUCE of the Goodyear Tire & Rubber Company, V. A. COSLER of the B. F. Goodrich Company and A. D. KUNZE of the Rubber Association of America were members of a committee which represented the rubber belting manufacturers at a standardization conference which the American Petroleum Institute held at Colorado Springs, Colo., June 12-15. Specifications for oil field belting were discussed but no changes were made in the specifications which have been in effect since December, 1927. The Institute has been intensifying its work on the use and care of oil field belting and good results have been obtained along this line.

M. L. PATTERSON BECOMES PRESIDENT OF CONVERSE

At the recent meeting of the board of director of the Converse Rubber Shoe Company, Malden, Mass., the resignation of M. M. Converse as president was accepted and Morton L. Patterson of Chicago, who has managed the western branches of the company for the past thirteen years, was elected to fill the vacancy. Mr. Converse has been named chairman of the board and will act in an advisory capacity.

Morton L. Patterson

Mr. Patterson was born in Scotland in 1871 and came to the United States in 1887, settling in Chicago, where he entered the employ of Phelps, Dodge and Palmer, shoe manufacturers. After four years he joined the western selling organization of the Wales-Goodyear Rubber Company, and laid the foundation for the wide contact which he now enjoys with the mid-western footwear trade. In 1889 he became Chicago manager of the newly organized Beacon Falls Rubber Shoe Company and achieved conspicuous success as an organizer and executive.

In 1914 Mr. Patterson joined the Converse Rubber Shoe Company as Chicago manager and has since built up a business which has placed his company in an enviable position in the trade. Shortly after joining the Converse organization he was elected as a director on the board, in which capacity his influence has been of great practical value.

BYRON MOOREHEAD, who has for some time been representing the Firestone Tire & Rubber Company in the sale of tires in the Akron district, has been transferred to Columbus.

VICTOR FALCK has been appointed traffic manager of the Ajax Rubber Company, succeding JOHN A. MOORE, who recently resigned.

C. C. GATES, president of the Gates Rubber Company, Denver, represented his company at the annual convention of the Automotive Equipment Association held at Mackinac Island, Michigan, June 18-20. He was accompanied on his trip East by two of his daughters.

S. M. M. MCCUBBIN has been appointed assistant sales manager of the Fisk Rubber Company's branch at Salt Lake City.

E. MICHELIN, president of the Michelin Tire Company, Milltown, N. J., accompanied by JAMES HICKS, division manager, and J. H. MCCOY, district manager, recently visited Portsmouth, O., in connection with the installation of the new Michelin tire protective plan.

GUY M. COLLETTE, general manager of the Collette Rubber Company, Racine, Wis., recently made a trip to the Pacific coast and through the southwest and reported business excellent as regards his company's sales. He also spent a few days in Akron.

R. B. SEABRIGHT, formerly chemist with the Seiberling Rubber Company, has started his own business with offices in the Second National Bank Building, Akron. He is specializing in compound development, factory processes and cost systems for rubber factories.

CHARLES SAMSON, manager of the accessories and repair materials department of the Kelly-Springfield Tire Company, was re-elected chairman of the Accessories and Repair Materials Division of the Rubber Association of America at its annual meeting held in Akron.

E. G. HOLT, chief of the Rubber Division of the Department of Commerce, recently spent a week in the Akron district in conference with executives of the rubber manufacturing plants in connection with the service of the Rubber Division to the industry. Mr. Holt later attended the Republican National Convention at Kansas City. In his absence from Washington, P. W. BARKER, newly appointed assistant chief, has been in charge of the Rubber Division.

H. W. ROLAND, assistant sales manager of the Ajax Rubber Company, Racine, Wis., has been appointed general sales manager. He is succeeded by HARRY H. HUBBARD. Mr. Roland was also advertising manager for Ajax for two years prior to his appointment as assistant sales chief.

CATALPO!

Timely Financial News

AETNA RUBBER OFFERS RIGHTS TO STOCKHOLDERS

The Aetna Rubber Company, Ashtabula, O., is offering to stockholders right to subscribe to 30,000 shares of additional stock at $17.50 per share in the ratio of three shares of new for each seven shares owned on June 15, payment to be made in cash on or before August 1. The company expects to realize $525,000 on the sale of the new issue which will be used for refinancing purposes and to equip a new manufacturing department which will produce rubber carpets and floor coverings.

The rubber glove department which has been recently moved to Ashtabula is expected to do over twice the volume of business this year that was done last. The regular dividends of 50 cents on common and 1¾ per cent on preferred will be paid on July 1. The outstanding preferred issue has been reduced to approximately $135,000. There was $144,000 outstanding on December 31 and $225,000 a year ago.

Baldwin Rubber Offers Stock

The Baldwin Rubber Company, Pontiac, Michigan, is offering 50,000 units of stock, each unit consisting of one share of class A convertible preferred stock and two-fifths share of class B common. Each unit is offered at $24.

The company manufactures rubber floor mats and rubber running boards for automobiles and is said to supply twenty-five of the larger car makers at the present time.

Intercontinental Passes Dividend

In view of the prevailing low prices of crude rubber and the uncertain outlook for the future in the crude rubber trade, the board of directors of the Intercontinental Rubber Company, at their meeting on June 13, decided not to declare the usual quarterly dividend of 25 cents per share.

Grasselli Refinancing Proposed

A stockholders' meeting of the Grasselli Chemical Company has been called for June 27 at which time the new refinancing plans of the company will be offered for approval. The plan provides for the division of each of the present $100 par value common shares into three no par shares. An increase in the authorized common share capitalization is also proposed. The directors, according to the announcement of the company, expect to dispose of 100,000 shares of the new common stock to the National City Company of New York for national distribution There are at present outstanding approximately $13,700,000 of 6 per cent preferred stock and 215,000 shares of common.

CATALPO!

RUBBER COMPANY STOCKS DROP IN BEARISH MARKET

The stock issues of most of the rubber manufacturing companies took a tumble on the stock market during the last fortnight. The announcement of reductions in tire prices and the general bearish tone of the various stock markets contributed to bring about a decline in values all along the line and caused some of the issues to touch new low records for the current year.

With the announcement of the tire price cut was associated the thought that the various companies will, in all probability, show a drop in earnings for the next quarterly period and a decided drop in the total for the year.

Ajax, Fisk, Goodrich, Goodyear and United States Rubber all went to new low levels during the period and Intercontinental dropped down to 9. In the latter case the action of the board of directors in passing the regular quarterly dividend was the chief contributing cause but with crude rubber at the present prices it is hardly to be expected that guayule, which is the product of the Intercontinental, can profitably compete and it is understood that some of the company's plants will close down until the market is more favorable. No new high records were established during the last two weeks.

The spectacular rise in Mohawk seems to have been stopped and the stock has now receded to 128. Rumors are still persistent to the effect that some of the smaller Akron companies will attempt a merger but nothing definite has been announced.

It is understood that India Tire & Rubber Company is still negotiating on a new refinancing plan.

Late Stock Prices

	Last Price June 19	June 4	1928 High	1928 Low
Ajax	7⅞	9⅝	14⅜	7½
Firestone	170	175	232	170
do. 6% pfd.	110	110	112	109
do. 7% pfd.	109	109	111½	108
Fisk	12⅝	15	17⅜	12
do. 1st pfd.	—	89½	91½	82
General	170	172	190	165
do. pfd.	100	100	111	100
Goodrich	71	85½	99⅜	68½
do. pfd.	110¾	114⅛	115	109½
Goodyear Com.	48¼	52¾	72½	47
do. pr. pfd.	94½	96	99½	92½
do. pfd.	—	—	120	100
Hood	28	29	43	28½
India	34¼	40	45	16
Intercontinental	9½	12⅝	21⅜	9
Kelly Springfield	17⅛	21⅞	27⅜	15
do. 1st pfd.	64	67½	80	58
do. 8% pfd.	—	77	84	55¼
Lee	19	21	24½	17¼
Miller	19¼	21	27½	18⅞
do. pfd.	76¼	79¾	97½	70
Mohawk	128	138	165	29¾
do. pfd.	85	—	85	55
Seiberling	39	45	49½	35
do. pfd.	107¼	105	107½	102
U. S. Rubber	35½	43½	63¾	34½
do. pfd.	66⅛	77½	109⅝	65¼
U. S. Rubber Reclaiming Com.	—	—	16½	11½

DE LASKI & THROPP SUES GOODYEAR IN PATENT CASE

The Goodyear Tire & Rubber Company has been named defendant in a suit filed recently in the Federal Court of Cleveland by de Laski & Thropp Company, in which the latter seek an injunction restraining further use of two types of tire building machines now employed by the defendant company.

The suit is an echo of the recent litigation by the same plaintiffs against the Murray Rubber Company, in an attempt to restrain the latter from using similar tire building machines on the ground of infringement of patent rights. In the previous case the suit was decided in favor of the Murray company. De Laski & Thropp, in bringing the suit against the Goodyear Company, are seeking to secure a decision in their favor which will be in conflict with the previous suit which they lost and thus bring the whole matter up again through the court of appeals.

India Shows Large Profits

The India Tire & Rubber Company report a net profit for May of $76,000 after all charges are deducted. It is said that their financial position is one of the best among the smaller companies around Akron. The entire inventory of rubber, including that in finished products, was taken at present maket quotations. According to officials of the company, the concern is well prepared to meet the recent cuts in tire and tube prices and a heavy increase in business is anticipated.

Auto Top Goods Firms Combine

Richards and Company, Inc., of Stamford, Conn., owners of The Zapon Company, have announced that they acquired the Duratex Corporation of Newark, N. J., on June 1. Manufacturing operations of the Duratex Corporation, which has specialized for many years in the manufacture of pyroxlyn coated and rubber coated top materials for automobiles, will be continued under the same management and personnel.

To Appeal Goodyear Suit

The minority stockholders' suit brought against the Goodyear Tire & Rubber Company by Kent P. Johnson and recently decided in the Common Pleas Court of West Union, O., in favor of the company will be carried to the court of appeals, according to an announcement by the attorney for Mr. Johnson, John A. Cline.

The stock of the Dayton Rubber Company, Dayton, O., has been listed on the Chicago Stock Exchange. The listing includes the preferred, priority common and class A common issues.

Rubber Goods and Specialties

Improved Rubber Cushion

The New York Rubber Corporation, Beacon, N. Y., which took over the old Airubber Corporation of Chicago, several months ago, has improved and revised their line of pneumatic mattresses, cushions and floats. One of the leading items which they are now offering to the trade is the "Comfy" seat cushion. It is made of high grade rubber with a tube for the purpose of inflating. The compactness of the cushion and its simple construction combined with a relatively low price has made it especially popular among this class of rubber goods.

Sponge Rubber Cushions

A sponge rubber chair cushion is the latest included in the products of the Sun Rubber Company, Barberton, O. They are made in various sizes to fit standard sizes of office chairs and are covered in brown or green felt or with blue or brown corduroy covering. The company has been one of the pioneers in the production of sponge rubber office specialties. Their line line of products include rubber desk pads, telephone bases, inkwell bases and cuspidor mats.

Protection to Golf Clubs

A new invention by a golfer, which effectively aids the grip as well as saves the end of golf sticks from rough usage is the "Protect-O-Grip," now being placed on the market by the Ohio Rubber Company, Cleveland, O. The device is made of live rubber and fits over the handle end of the golf club snugly, forming a vacuum and will not come off.

It is claimed to assist in holding the grip firmly in driving and at the same time prevents damage to the leather tip in knocking around in the golf bag or the constant rough treatment it receives during play. The club is simply dampened when attaching and no glue or cement is required. They are retailed in an attractive display box, packed three dozen to the box, at 25 cents each.

Golf Practice Device

A new driving practice device for golfers has been introduced by Golf Masterpieces, Inc., Cleveland, O., which is designed to keep the devotees of the game in form and assist the beginner in developing his driving technique. The device may be used in the home, indoors or out or any place where one can have headroom to swing the club. As shown in the illustration, a tough, durable rubber cord anchors the ball to the back of a heavy rubber mat and permits the ball to respond exactly to the stroke of the club. The ball will react precisely as a regular ball, indicating sliced, pulled or straight drive and topped or sliced ball. The distance of the target indicates accurately the distance of the drive. The manufacturer claims that the device will stand heavy abuse. It requires no nets, cages or backstops and one can swing on the ball with full force without fear of harming anything.

"Giant Joy Ball"

A Giant Joy Ball for sport in indoor swimming pools, water sports, outings, picnics, or physical culture classes is the latest product of the Victor Novelty Manufacturing Company, Akron, O. It is made in two sizes, 18 and 24 inches in diameter, in panelled color combinations. It is covered with durable cord fabric, heavily rubber coated with a glazed finish. The seams of the panels are double stitched and reinforced over both ends. It is fitted with a heavy duty four piece basket ball type of bladder. Extra bladders are supplied through the dealers so that the ball can be kept in service a long time.

Improved Heel Grip

An improved style of rubber heel grip for pumps and women's low shoes is being marketed by the Wizard Company, St. Louis, Mo. The pad is of soft rubber and holds the heel firmly but gently at the sides of the counter of the shoe. They are made in one size only but will fit any shoe, and in neutral champagne color which makes them inconspicuous and harmonizes well with any standard lining.

Rubber Heel Grips in Place

"Suprex" Rubber Heels

The new "Suprex" heel of the Hood Rubber Company, Watertown, Mass., which is now being offered to the trade, has several attractive features. It is claimed that it is lighter than the ordinary rubber heel and has the same abrasive quality as that of automobile tire tread stock, with a tensile strength averaging 2,500 pounds to the square inch. The thick rubber strip (1) as shown in the illustration, and the extra thick buttons (2) at the rear edge of the heel are claimed to double the wearability of the heel.

"Fits-All" Auto Mat

The Rub-Tex Products Company, Indianapolis, Ind., has developed an automobile floor mat which they claim will fit any make of car. It has a five inch border on each side and a four inch border in front, which permit the dealer or purchaser to trim off the excess width to make a perfect fit in any car. The new mat has a special appeal to the auto accessories dealer in that it enables him to promptly refit any car without the necessity of keeping a large assortment of various sized mats. The new product has been given the trade name of the "Fits-All" mat.

Current Crude Rubber Items

DUTCH BANKER HAS PLAN FOR RUBBER VALORIZATION

A new plan of cooperation between British and Dutch rubber growing interests has been put forward by Mr. Kloppenburg, a well-known banker of The Hague, which is in the nature of a scheme for the valorization of rubber. The plan has been forwarded to the London Rubber Growers' Association and to the International Association for Rubber Cultivation in view of the fact that for carrying out the plan it is essential that identical legislative measures be taken by the Dutch and British governments.

Mr. Kloppenburg first sent copies of the scheme to Dutch and British colonial authorities. The Dutch in turn advised him to submit the plan to a committee of seven appointed by the International Association for Rubber Cultivation, while the British recommended that the plan be officially submitted through the intermediary of the Rubber Growers' Association.

The scheme is now being presented to these two organizations with a request that they hold a consultation regarding measures likely to lead to the practical realization of the scheme. In view of the governmental attitudes of both the British and Dutch, however, very little hope is held out for any serious consideration of the plan.

BALATA MARKET SUFFERS FROM OVER-PRODUCTION

The balata industry has been experiencing a crisis as a result of over-production, and the present price of about 52 cents per pound for British Guiana sheet is considerably under the cost of production in British Guiana, which may be reckoned at 60 cents per pound, or more than three times the present market price of cultivated rubber.

The almost complete stoppage in the construction and replacement of submarine cables due to the advance of the beam radio system has largely contributed to the depression in the balata industry, but the agreement which has now been reached in the cable and radio world seems to assure a resumption of the demand, though possibly on a limited scale.

To the aid of the submarine cable there has also recently come the new methods of inductively loading a cable through its entire length, thus increasing the traffic capacity threefold. High-grade gutta percha has not suffered so much in price as balata. It is much less of an open market than the latter, being very largely controlled by the cable construction undertakings, some of which are engaged in its production and have far-reaching organizations for obtaining supplies at or near the source.

ECONOMIC LIFE OF A RUBBER PLANTATION

A circular of the International Association for Rubber and Other Cultures in Netherland India gives the results of discussions held recently to determine a uniform writing-off percentage on rubber plantations. Under the company tax instituted in 1924, a writing off of 2 per cent has been allowed. The recent discussions have resulted in tentative adoption of 4 per cent as a more reasonable and generally acceptable allowance, based on the economic life of a rubber plantation which on this basis is estimated at 25 years. Further discussions are expected to result in fixing a definite percentage for taxation purposes.

MALAY RUBBER INSTITUTE TO EXTEND ACTIVITIES

With the removal of restriction the new Rubber Research Institute in Malaya will probably be called upon to play a more important part in the affairs of the industry than it has hitherto had opportunity to do. The Institute was established for the purpose of research into and investigation of all problems and matters connected with the cultivation and preparation of rubber and the provision of information relating thereto.

It is now proposed to establish an experimental station, and the Government has promised to make available to the Institute an area of approximately 2,000 acres in the Sungei Buloh Forest Reserve.

TRADING ON EXCHANGE IS QUIET BUT STEADY

Fluctuations in Quotations Over the Last Fortnight Have Been Confined Within Narrow Limits—Speculative Interest Slight—Market Featureless.

TRADING on the Rubber Exchange of New York during the last fortnight has been quiet and featureless with the market holding firmly around the 19 cent level. Fluctuations throughout the entire two weeks have been within the narrow range of fifty points. The number of daily transactions have been extremely small and the trading has been largely for actual rubber and little or no speculation interest has been manifested.

The price levels on the distant future positions reflect the lack of confidence which the market seems to have on any commitments beyond September. Quotations for distant positions are being offered at the same levels as for nearby months and in some instances at even lower figures.

Demand Is Light

Demand has been unusually quiet with factory inquiries largely confined to small orders for nearby deliveries. There continues also to be a fair amount of buying for foreign accounts.

The market was encouraged by the high consumption figure for May and by the improvement which has occurred in the statistical position of crude rubber. Stocks in London continue to show a decline and stocks in the United States and afloat also registered a drop from the previous high figures. World stocks at the end of May were estimated at 221,000 tons, a decrease of about 43,000 tons since January.

The reduction in tire prices did not effect the market as the action was fully expected and discounted.

It is reported from London that the Rubber Growers' Association is circularizing its members, recommending to producers that they spread the export of their surplus stocks existing on November 1 next over the following six months so that too much rubber may not come on the market the beginning of next year. It is still not possible to estimate accurately just what production will be on hand on November 1 but the fear of an accumulation of stocks is blocking any bullish tendency in the market.

The table below indicates the daily changes in prices on the Exchange and the daily volume of sales.

Closing Prices on Rubber Exchange of New York, Inc.

JUNE 6 TO JUNE 20, 1928

Date		Spot	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Sales*
June	6	19.50	19.20	19.40	19.50	19.60	19.60	19.60	19.50	19.50	19.50	19.50	19.50	19.50	460
	7	19.10	19.10	19.10	19.20	19.30	19.30	19.30	19.30	19.30	19.30	19.30	19.30	19.30	418
	8	19.40	19.20	19.20	19.20	19.30	19.30	19.30	19.30	19.30	19.30	19.30	19.30	19.30	215
	9	19.40	19.10	19.20	19.30	19.40	19.40	19.40	19.40	19.30	19.30	19.30	19.30	19.40	80
	11	19.00	19.00	19.00	19.10	19.20	19.10	19.10	19.00	18.90	19.00	19.00	19.10	19.20	218
	12	19.00	19.00	19.00	19.00	19.10	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.20	306
	13	19.20	19.10	19.20	19.20	19.30	19.30	19.30	19.30	19.30	19.30	19.30	19.30	19.40	923
	14	19.50	19.40	19.50	19.50	19.60	19.50	19.50	19.50	19.50	19.50	19.50	19.50	19.50	574
	15	19.40	19.20	19.30	19.40	19.60	19.50	19.50	19.40	19.40	19.40	19.30	19.40	19.40	214
	16	19.00	19.00	19.10	19.10	19.10	19.00	19.10	19.10	19.10	19.10	19.10	19.10	19.10	197
	18	19.20	19.20	19.20	19.20	19.20	19.20	19.20	19.20	19.10	19.10	19.10	19.10	19.20	154
	19	19.30	19.20	19.30	19.30	19.40	19.30	19.30	19.20	19.10	19.20	19.20	19.30	19.30	193
	20	19.40	19.30	19.40	19.40	19.50	19.40	19.40	19.40	19.30	19.30	19.30	19.30	19.20	374

(*) In lots of 2½ tons each

CATALPO!

Rubber News Around the World

IRISH FREE STATE PUTS TAXES ON AUTO TIRES

A levy on tires is the latest form of taxation included in the budget of the Irish Free State. The advocacy of such a tax is said to be due to pressure from the Irish railways which have been operating at a loss due to the tremendous recent growth of motor lorry transportation throughout the island. The new tax will be in the manner of a substitute for the present petrol tax, which under the new budget will be discontinued. It has been found impractical and a particular hardship to impose the old petrol tax because it was found impossible to levy it without taxing at the same time the paraffin used by the poorer classes for heating and lighting.

With the imposition of the new tax, however, the situation will be considerably complicated as regards travel between the Free State and Northern Ireland, where the tax on petrol still exists in common with the rest of the United Kingdom. Motorists passing over the border will have to submit to a stop to permit the petrol contents of the tank to be measured and the tax imposed. Nor is this tax recoverable when the car repasses the boundary.

GERMAN ELASTIC THREAD MANUFACTURERS COMBINE

The price-fixing arrangement which has existed among the elastic thread manufacturers of Germany for some time has now given way to the formation of a combined sales organization. The new concern, which came into existence April 1, is known as the Verkaufsvereinigung Deutscher Gummifaden-Fabriken G. m. b. H., and comprises the following firms: Carlswerk-Clouth G. m. b. H. fur Gummifadenherstellung, of Koln-Nippes; Gummiwerke "Elbe" A.-G., of Klein-Wittenberg (Elbe); Gottfried Hagen A.-G., of Koln-Kalk; Hoxter-sche Gummifadenfabrik G. m. b. H., of Hoxter, (Westphalia); and the Kolnische Gummifaden-Fabrik, vorm. Ferd. Kohlstadt and Co., of Koln-Deutz.

The offices of the syndicate are at 1, Elisenstrasse, Cologne. The company contract is valid until December 31, 1937.

New Pirelli Plant in England

Tires are about to be manufactured at Burton-on-Trent, England, by Pirelli, Ltd., the well known Italian rubber concern, which already owns seven tire factories in the United Kingdom, Spain and South America. A start is to be made at once on the construction of a factory on 46 acres of land. About 1,000 hands will be employed. The building is to be erected on land belonging to Burton-on-Trent Corporation, the town council having approved the final details.

CATALPO!

RUBBER JEWELRY IS FASHION'S LATEST FAD

Rubber jewelry is the latest fad which has made its appearance on the beaches of the fashionable bathing resorts of Holland. Rubber necklaces, bracelets, imitation wrist watches and rings, some of which are set with imitation stones, are being worn in increasing numbers. Chic bathing caps and cloaks of rubber in a variety of colors with sponge rubber slippers to match are also being worn more this season than ever before.

German Firms Plan Merger

Rumors from Germany have been persistent to the effect that a number of the tire manufacturing concerns are planning a combine. The companies involved are the Continental Rubber Company, Hanover; the Harzburger Rubber factory "Phoenix" and the Peters Union, Frankfort; the Excelsior Rubber Works, Ltd., Hanover, and the German Dunlop Company, Hanau.

BRITISH TRADE IN RUBBER CLOTHINGS SLACKENS OFF

After a busy period, which lasted until April, the British rubber garment trade has quietened down. The latter half of April proved a very slack time, for although both proofers and makers-up are still fairly busy on old orders, very little new business has been booked during the last few weeks. As a result, competition is very keen and prices have been unsettled. It is believed that there are heavy stocks in the hands of distributors, due to large purchases last year, when garments were difficult to obtain, and the public has so far purchased very sparingly.

Elected Fellows of I. R. I.

At the Council Meeting of the Institution of the Rubber Industry, on May 18, the following well-known American rubber men were among the number elected Fellows of the Institution: Dr. A. A. Somerville, of R. T. Vanderbilt Company; John M. Bierer, of the Boston Woven Hose and Rubber Company; Dr. David Spence, of the Continental Rubber Company, and Dr. W. C. Geer. Under the rules of the Institution the election as a Fellow entitles the recipient of the honor to use the abbreviation F.I.R.I. after his name.

AUSTRALIAN GOODYEAR ENDS YEAR WITH LOSS

The report of the first year of operations of the Goodyear Tyre & Rubber Company (Australia), Ltd., shows a net loss of £38,754. Gross profits totaled £36,624, but expenses and provision for bad debts and depreciation totalling £75,378 completely wiped out any net earnings. Payments on account of preferred dividends fo the six months ended June 30, 1927, amounting to £5,819, brought the total deficit for the year to £44,573.

Sales during the year in point of unit volume were the highest in the history of the company, but all the sales were on imported products as the new local factory of the company did not get into operation until late in November. Operations for the first six months were done at a satisfactory profit but the imposition of the new high Australian tariff coupled with four successive price declines, brought about a loss in the last part of the year.

With the completion of the factory at Granville and operations now in full swing the directors of the company look forward to a successful year in 1928. Manufacturing costs are said to have been brought down to extremely low figures.

BRITISH FIRM CONTROLS SOUTH AFRICAN COMPANY

The Leyland & Birmingham Rubber Company of England has recently acquired a controlling interest in the South African Rubber Manufacturing Company, according to reports received by the Department of Commerce.

For some time past it has been known that the South African Rubber Manufacturing Company has been handicapped in their extension program by lack of capital. This difficulty, it is believed, will now be overcome. The plant, which has been removed from Howick in Natal to Germiston, is now well along and machinery is being received from Howick. In addition to rubber heels, hose and a number of other miscellaneous rubber products, the South African Rubber Manufacturing Company has recently started the manufacture of tennis balls. A director of the Leyland & Birmingham Rubber Company is now enroute to South Africa and it is said that additional expansion in the manufacture of other rubber specialties is being considered.

The Goodyear Tire and Rubber Company of Canada is operating at peak capacity and producing 9,000 tires and tubes per day, according to C. H. Carlisle, general manager of the Canadian plant.

British exports of tire casings again showed a drop during April from the shipments made in the first two months of the current year. A total of 45,526 casings were exported as compared with 59,854 in March.

CABOT CONTINUES TO EXPAND IN TEXAS FIELD

The construction force of the Godfrey L. Cabot, Inc., who are now at work on a new carbon black plant near Pampa, Texas, will be moved immediately to Skellytown, Texas, for the construction of two new channel units and a roller process unit. This new construction at Skellytown will be an addition to the large plant which started full operation in January.

The Godfrey L. Cabot, Inc., expect to complete carbon black plants in Texas this year which will be producing by the end of the year at a rate of over 28,000,000 pounds annually.

The Bureau of Mines reports the world's production in 1927 as 198,429,000 pounds. Cabot's increase is, therefore, over 14% of the total production of the industry.

Buys Balloon Paintings

The Goodyear Tire & Rubber Company has purchased two paintings of the recent national balloon races held last year at Akron. The canvases are by Morris Grossman a Cleveland artist, and will be hung in the main lobby outside of the executive offices of the company.

One, an oil called "The Baloon Race," shows a general panorama of the field, the balloons and the crowds of spectators. The other, a water color, "The Sandbag Men," depicts a group of workmen and balloon pilots gathered about one of the big bags on the field.

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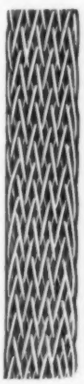

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LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

JUNE 20, 1928

COTTON

THE raw cotton market has weakened slightly during the last fortnight, due in large measure to the general bearish movement in financial circles. Sales of cotton cloth during May amounted to 77.2 per cent of production, indicating that mills may curtail operations if present demand continues slack. Uncertainty relative to the new crop also is contributing to unsettle the market. Government reports, contrary to expectations, indicate that the boll weevil emergence, so far this year, has been extremely light, probably due to the unseasonable cool weather which has generally prevailed over the cotton belt. It is thought, however, that the backwardness of the crop, unless overcome by exceptionally favorable weather conditions from now on, will increase the possibility of heavy damage from the weevil later in the summer.

High, low and closing prices as of May 19, were as follows:

	High	Low June 20	Close	Close June 4
June	——	——	*20.68	*20.77
July	20.75	20.56	20.73	20.82
August	——	——	*20.76	*20.82

*Nominal.

Tire Fabrics

The market for tire fabrics has been somewhat stimulated by the reduction in tire prices and factories have shown a more active interest in their inquiries. It is expected that the lower tire prices will increase sales and reduce manufacturers' inventories to the point where further commitments of fabric will be necessary. The consumption of fabric thus far this year has been considerably in excess of the total poundage during the same period last year.

CORD			
Peeler, carded, 23/5/3	lb.	.45 @	.46
Peeler, carded, 23/4/3	lb.	.46½@	.47½
Peeler, carded, 13/3/3	lb.	.43 @	.43
Peeler, carded, 15/3/3	lb.	.44 @	.44½
Egyptian, carded, 23/5/3	lb.	.56 @	.57
Egyptian, combed, 23/5/3	lb.	.60 @	.62
CHAFERS			
Carded American, 8 oz.	lb.	.39 @	.40½
Carded American, 10 oz.	lb.	.41 @	.42
Carded American, 12 oz.	lb.	.41 @	.42
Carded American, 14 oz.	lb.	.39 @	.44
LENO BREAKER			
Carded American, 8¼ oz.	lb.	.40 @	.43
Carded American, 10¼ oz.	lb.	.40 @	.43
SQUARE WOVEN			
Carded American, 17¼ oz. 23-11 ply	lb.	.45 @	.47
Carded American, 17¼ oz. 10-5 ply	lb.	.39 @	.40

Sheetings

Very little interest has been manifested in sheetings over the last fortnight except for export. Domestic orders have been for small quantities although some sizeable business was done in 40-in. 2.85 yard at 11 cents. Practically all the business done was for spot. Latest prices were as follows:

40-inch, 2.50-yard	yd.	.12⅛@	.12½
40-inch, 2.85-yard	yd.	.11 @	.11¼
40-inch, 3.15-yard	yd.	.11⅜@	.12
40-inch, 3.60-yard	yd.	.09¾@	.10
40-inch, 3.75-yard	yd.	.08⅞@	.09
40-inch, 4.25-yard	yd.	.07⅞@	.07⅛

Ducks

The business done during the past two weeks has been limited to small transactions. The demand has been so slight that mills have been unable to reduce their inventories as fast as they had desired and operators are reported to be curtailing their output. Prices have remained practically unchanged as follows:

Belting and Hose	lb.	.35 @	.36
Enameling	lb.	.35 @	.38
Single filling	lb.	.15½@	.18
Double filling	lb.	.18 @	.19

RECLAIMED RUBBER

The low crude rubber prices are beginning to have an effect on the reclaimed rubber trade as indicated by the decline in the percentage of reclaimed consumption during May. The situation, however, has not affected the price levels which remain unchanged. The amount of reclaimed used in May totaled 17,746 tons, which was slightly higher than the tonnage used in April but the percentage in relation to the amount of crude rubber used was 47.5 as against 51.6 in April. Reclaimers are still producing at capacity levels. Late prices are as follows:

High Tensile			
Super-Reclaim No. 1 Black	lb.	.14 @	.14¼
Super-Reclaim No. 2 Black	lb.	.11¾@	.12
High Tensile Red	lb.	.13¾@	.14
Shoe			
Unwashed	lb.	.07¼@	.07½
Washed	lb.	.10 @	.10¼
Tube			
No. 1 (Floating)	lb.	.14½@	.15
No. 2 (Compounded)	lb.	.11½@	.11¾
Tires			
Black, washed		.09½@	.10
Black, unwashed		.07¾@	.08
Black selected tires	lb.	.08¼@	.08½
Dark Gray	lb.	.10½@	.11
Light Gray	lb.	.12 @	.12½
White	lb.	.14 @	.14½
Truck, Heavy Gravity	lb.	.07¼@	.07½
Truck, Light Gravity	lb.	.07¾@	.08
Miscellaneous			
Mechanical Blends	lb.	.07 @	.08
Red	lb.	.13½@	.14

Scrap Rubber

The scrap rubber market has remained steady during the last fortnight with prices holding up due to collections being light and thus making offerings scarce. Bad weather conditions are responsible for poor collections in general but lower prices offered by the dealers on several of the more popular scrap grades are also contributing. Dealers report a slight decline in demand from reclaimers. Latest prices follow:

(Prices to Consumer)

Auto tire peelings	ton	37.50	@40.00
Standard White auto	ton	55.00	@57.50
Mixed auto	ton	24.00	@25.50
Bicycle tires	ton	25.00	@27.50
Clean solid truck tires	ton	22.00	@24.00
Boots and shoes	lb.	.01⅜@	.01½
Arctics, trimmed	lb.	.01⅜@	.01¼
Arctics, untrimmed	lb.	.01 @	.01¼
Inner tubes, No. 1	lb.	.07½@	.07¾
Inner tubes, No. 2, compounded		.04¼@	.04½
Inner tubes, Red	lb.	.05¾@	.06
Air Brake Hose	ton	35.00	@37.50
Rubber Hose	ton	18.00	@20.00

CRUDE RUBBER

THE crude rubber market has experienced a fortnight of extreme dullness with prices remaining fairly steady around the 19 cent level. Factory demand has dropped off sharply and the trading has been confined in a large measure to small orders and for spot deliveries. It is also reported that plant operations are being curtailed in a number of centers and while May production will probably reach a record peak the figures for June may register a falling off.

The market has been somewhat encouraged at the improvement made in the statistical position of crude rubber. London stocks have continued to drop and the amount of rubber in sight in the United States and afloat has also declined. This improvement in stocks coupled with the high rate of consumption as reported for May have been the chief factors in holding prices firm in spite of the slackened demand. The announcement of the reduction in tire prices had little or no effect on the market as such action had been contemplated for some time and its effect discounted. There is still the fear, however, of November 1 and its aftermath.

Throughout the fortnight the daily fluctuations in prices have been between extremely narrow limits and the market has apparently become stabilized around the 19 cent level. Paras and off-grades are still being maintained at levels which are not specially attractive in comparison to first quality grades and have for the most part been quoted nominally.

Prices on the New York outside market on June 19, were as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot	.19¾@		.19⅞
June	.19⅞@		.19⅞
July-Sept.	.19¾@		.19⅞
First Latex, crepe spot	.19½@		.19¾
Amber Crepe, No. 2	.18½@		.18¾
Amber Crepe, No. 3	.18 @		.18¼
Amber Crepe, No. 4	.17¾@		.18
Brown Crepe, Rolled	.18¼@		.18½
Brown Crepe, Clean, thin	.18¾@		.19
Brown Crepe, specky	.18¼@		.18½
Liquid Latex, per gal.		@	1.50
Paras—			
Up-river Fine	.21 @		.21½
Up-river Medium	Nominal		
Up-river Coarse	.14½@		.15
Acre Bolivian, fine	.21¾@		.22
Caucho Ball, Upper	.13½@		.14
Islands, fine	.16 @		.16½
Centrals—			
Central, scrap	.14 @		.14½
Esmeraldas	.14 @		.14½
Guayule, washed and dried	— @		.16
Balata—			
Block, Colombia	Nominal		
Block, Cuidad	.38 @		.39

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot	9¼@		9⅜d
June	9¼@		9⅜d
July-Aug.	9⅜@		9½d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	9 @		9⅛d

RUBBER FACTICE OF HIGHEST QUALITY
THE STAMFORD FACTICE
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THE STAMFORD RUBBER SUPPLY CO

Smoothness of the surface of a rubber product is noticeable where Factice is used

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EMBOSSING CALENDERS

For Artificial Leather, Oil Cloth, Carriage and Automobile Covers

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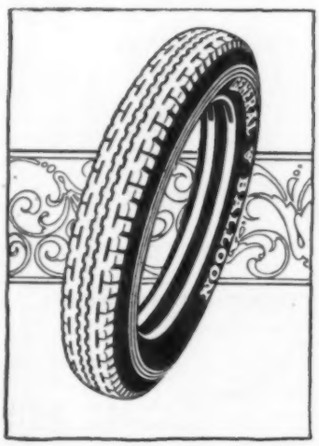

The
GENERAL
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LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

NEW YORK, JUNE 20, 1928

CHEMICAL and compounding material producers and distributors have been enjoying improved conditions since our last report. Tire plants have jumped up their production schedules to new levels and are increasing their demands for raw materials and supplies. One large chemical factor reports that his warehouses have been cleaned out by increased demands of the industry and that a two-week shipping policy has had to be enforced. The decrease in tire prices announced on June 11 helped to step up demand from tire dealers throughout the country and manufacturers have as a result speeded up production to meet this condition. Mechanicals and drug sundries are reported fairly active, but many footwear plants are running on low schedules. Prices are practically unchanged, quotations being as follows:

ACCELERATORS

Organic			
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
Aero-X	lb.	.75 @	—
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16¼
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyiguanidine	lb.	.48 @	.50½
Diphenylguanidine	lb.	.40 @	.42½
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde Aniline, 140° m. p.	lb.	.33 @	.35½
Formaldehyde Aniline, 60° m. p.	lb.	.31 @	.33½
Grasselerator 102	lb.	.62½@	.67½
Grasselerator 552	lb.	4.45 @	4.60
Grasselerator 808	lb.	1.00 @	1.10
Grasselerator 833	lb.	1.40 @	1.55
Heptene	lb.	.45 @	.55
Hexamethylene-tetramine	lb.	.57½@	.60
Lithex	lb.	.18 @	.20
Methylenedianilide	lb.	.36 @	.37
Monex	lb.	3.25 @	—
Oynone	lb.	.68 @	.80
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92 @	.96
Piperidine-Piperidyldithio-Carbamate	lb.	4.45 @	4.60
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
Safex	lb.	1.20 @	1.25
Tensilac, No. 39	lb.	.50 @	.52½
Tensilac, No. 41	lb.	.50 @	.52½
Thermlo F	lb.	.50 @	.55
Thiocarbanilide, drums	lb.	.25½@	.26½
Thionex	lb.	3.25 @	—
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.65 @	.70
Vulcanex	lb.	.68 @	—
Vulcone	lb.	.68 @	—
Vulcanol	lb.	1.03 @	1.08
Waxene	lb.	.30 @	.32
Z 88	lb.	.65 @	.69
Inorganic			
Lead, sublimed blue	lb.	.08¼@	.08¾
Lead, white	lb.	.10½@	.12½
Litharge, domestic	lb.	.09 @	.09¼
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.33 @	.35
Ultramarine	lb.	.06 @	.30
Browns			
Sienna, Italian	lb.	.05 @	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.34 @	.36
Reds			
Antimony			
crimson, 15/17	lb.	.44 @	.50
sulphur free	lb.	.50 @	.55
golden 15/17 F.S.	lb.	.18 @	.22
Indian English	lb.	.08 @	.12
Domestic (Maroon)	lb.	.08 @	.12
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Venetian red	lb.	.03 @	.06
Vermillion, quicksilver,			
English	lb.	1.85 @	1.95
Whites			
Lithophone, Akcolith	lb.	.05 3/5@	.06
Lithophone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox	lb.	.10 @	.10½
Cal. Base Pigment	lb.	.10 @	.10½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.07⅛
Zinc Oxide—French Process			
White seal	lb.	.11⅞@	—
Green seal	lb.	.10⅞@	—
Red Seal		.09⅞@	—
Yellows			
Chrome	lb.	.15½@	.16½
Ocher, French medium	lb.	.03½@	.06
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Blacks			
Arrow "Aerfloted"	lb.	.08 @	.12
Bone Black	lb.	.06½@	.11
Carbon, compressed	lb.	.07½@	.11½
Carbon, uncompressed	lb.	.07 @	.11
Drop Black	lb.	.06 @	.10
Gastex	lb.	.05¼@	.05½
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.08 @	.12
Velvetex carbon	lb.	.04 @	.07
Blanc fixe dry f.o.b. works	lb.	.03½@	.03⅝
Carrara filler	lb.	.01⅝@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	ton	12.00 @	14.00
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	9.00 @	20.00
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.22 @	.26
medium white	lb.	.20 @	.24
Magnesin, carbonate	lb.	.08½@	.11
Mica, powdered	ton	65.00 @	80.00
Rotten Stone (powdered)	lb.	.02½@	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.50 @	3.70
Talc, domestic	ton	12.00 @	15.00
Velvetex	lb.	.04 @	.07
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Superfine	ton	10.00 @	12.00
Witco	ton	12.00 @	—
Wood pulp XXX	ton	45.00 @	—
Wood pulp X	ton	25.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.18½@	.19½

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Montezuma, solid	ton	28.00 @	36.00
Montezuma, granulated	ton	32.00 @	42.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	42.00 @	45.00
Pioneer-granulated	ton	52.00 @	55.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.35 @	.36
Acids, Fatty			
Stearex	lb.	.10 @	.14
Stearic, double pressed	lb.	.11½@	.12½
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.40 @	
Oils			
Corn, refined, bbls.	lb.	.11 @	.11½
Cottonseed, crude		.08½@	.08¾
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c. l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05 @	.06
Hexalin	lb.	.60 @	—
Acetate	lb.	.70 @	—
Linseed, Raw C.L. bbl.	lb.	.09½@	.10
Palm Lagos	lb.	.07¼@	.07½
Niger	lb.	.07¾@	.08
Vansulol	lb.	.10½@	—
Para-Flux	gal.	.17 @	—
Peanut, domestic, crude	lb.	.12 @	.12¼
Petrolatum, white	lb.	08⅞@	.09
dark amber	lb.	.03⅝@	.03½
Pine, steam distilled	lb.	.70 @	
Rapeseed, refined	gal.	1.04 @	1.06
Rosin, grade K, 280lb. bbl.		9.65 @	—
second rectified	gal.	.58 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	9.00 @	10.00
Rosin, grade K, 280 lb.	bbl.	9.65 @	—
Pigmentar	gal.	.33 @	.41
Tar Retort, 50 gal.	bbl.	12.50 @	13.00
Solvents			
Acetone, pure	lb.	.13 @	
Alcohol denatured, No. 1 bbls.	gal.	.37½@	.44½
Benzol, 90%	gal.	.28 @	—
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride	lb.	.06¼@	.07
Motor gasoline, steel bbls.	gal.	.17 @	—
Naptha, solvent	gal.	.35 @	.40
Turpentine, spirits	gal.	.60 @	.64
wood	gal.	.50 @	.54
Waxes			
Beeswax	lb.	.56 @	.58
Carnauba	lb.	@	.50
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Miscellaneous			
RSL Mold Solution	gal.	.75 @	.100

ANTI-OXIDANTS

Antox	lb.	.79 @	.83
Neozone	lb.	.74 @	—
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.65 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03¼@	.03½
Sulphur flour,			
Superfine bags	cwt.	2.20 @	2.80
Superfine, bbls.	cwt.	2.55 @	3.10
100% pure, refined,			
bags	cwt.	2.60 @	3.15
bbls.	cwt.	2.95 @	3.50

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

THE imports of crude rubber dropped off during May from the high levels which have prevailed for the first four months of the year. The consumption figures for the month are especially gratifying and represent a record in the history of the industry. As a result of the decrease in arrivals and of the high consumption, stocks on hand showed a decline. Rubber invoiced and afloat to the United States, however, is still reported in fair volume.

The market price for crude rubber in both London and New York has been maintained fairly firm during the fortnight with daily fluctuations confined within the smallest fractional limits and while trading has been light, the improvement in the statistical position of the commodity has acted as the chief steadying factor in the market.

Stocks in London have steadily declined to the lowest point since September, 1926, and Singapore stocks have also been reduced. Production of automobile casings and inner tubes and also automobile rims continued high, indicating no let-up in automobile production.

A new statistical table showing the consumption of reclaimed rubber in the United States is included in this issue and will hereafter be continued as part of the statistical section.

Latest figures covering imports and exports in the leading consumption and producing markets have been added to the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1926:							
Jan.	42,404	72,528,151	76.36	2,059	3,747,505	81.24	40,345
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,281	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.25	1,437	1,519,870	47.20	35,675
Oct.	29,746	25,320,558	38.49	1,366	1,316,270	43.03	28,110
Nov.	39,155	34,890,536	39.78	1,482	1,411,517	42.51	37,673
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.86	1,525	1,444,734	42.28	41,815
Feb.	28,337	23,110,257	36.41	2,451	2,277,297	41.47	25,886
Mar.	35,515	28,693,016	36.07	2,763	3,249,665	52.50	32,752
Apr.	46,202	37,321,505	36.06	1,575	1,428,425	40.48	44,627
May	36,518	30,984,377	37.88	2,782	2,501,562	40.14	33,736
June	33,045	27,850,014	37.62	1,775	1,550,592	39.00	31,270
July	37,677	31,678,259	37.53	1,958	1,560,853	35.59	35,719
Aug.	32,810	26,396,931	35.92	1,809	1,382,768	34.12	31,001
Sept.	33,301	25,314,412	33.94	3,500	3,036,929	38.74	29,801
Oct.	30,184	22,163,282	32.78	2,513	2,042,713	36.29	27,671
Nov.	38,592	27,395,428	31.69	2,469	2,014,196	36.43	36,123
Dec.	30,737	22,213,574	32.26	2,655	2,245,754	37.77	28,082
1928:							
Jan.	39,108	30,278,444	34.56	1,988	1,734,990	38.95	37,120
Feb.	33,664	27,763,655	36.82	2,738	2,229,589	36.35	30,926
Mar.	40,688	32,109,376	35.23	3,718	2,587,434	31.07	36,950
Apr.	37,958	27,296,346	32.23	2,272	1,415,024	27.80	35,686
May	31,058	19,058,672	27.80				
June							
July							
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1921	1922	1923	1924	1925	1926	1927	1928
Jan.	5,045	16,938	30,106	29,058	29,638	32,196	31,518	34,403
Feb.	5,955	14,767	30,149	25,736	29,761	31,136	30,137	33,702
Mar.	9,190	21,408	36,629	28,385	33,498	32,936	36,141	35,688
Apr.	13,084	19,294	29,085	27,129	34,139	32,696	35,871	32,772
May	16,023	23,246	36,155	25,845	35,322	29,364	34,592	
June	16,142	31,713	24,272	22,753	35,822	28,598	33,801	
July	18,310	24,522	17,685	23,396	36,053	27,577	29,219	
Aug.	23,649	29,361	20,359	28,982	35,909	34,533	33,460	
Sept.	16,705	24,410	17,594	31,497	31,691	32,904	27,214	
Oct.	16,814	26,881	21,321	31,520	29,047	29,836	26,790	
Nov.	14,105	24,950	20,437	27,289	28,853	28,080	26,792	
Dec.	15,482	25,070	21,902	27,199	28,748	26,293	25,492	
Totals	170,504	282,560	305,694	328,769	388,481	366,149	371,027	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926	1927	1928
Jan./Mar.			96,776	87,609	95,263	94,301	99,216	103,558
Apr./June	65,463	127,360	89,493	75,674	104,099	87,109	103,242	
July/Sept.			55,621	83,813	99,493	93,793	89,210	
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	80,860	
Totals	171,425	282,427	305,507	339,752	384,644	358,415	372,528	103,558

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
April 14	3,097	606	1,585	209	5,497
April 21	4,190	42	1,215	2,535	7,982
April 28	2,498	484	895	739	4,616
May 5	4,220	652	1,464	1,177	7,513
May 12	2,797	381	1,374	785	5,287
May 19	3,210	429	1,334	723	5,696
May 26	4,404	435	1,409	2,921	9,169
June 2	3,799	1,020	1,306	1,094	7,219
June 9	4,629	209	1,373	490	6,701
June 16	3,335	326	1,652	1,020	6,333

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1925																																
September	88¼	87¼	55	81¾	81½	—	78¼	—	80⅞	83	86½	92	92½	—	93½	93⅝	92¾	92¾	94¼	—	92	93¾	93½	90	89	—	89¾	91¾	91½	—	88⅞
October	91¼	91¾	92	94½	87	97½	99	—	99¾	101	—	—	97¾	95½	97	99¾	99	99	—	101½	102	99¾	99¼	99¾	98	—	99½	101½	99¾	100¼	98
November	99¾	—	—	98¾	98¾	100	—	108	100¼	—	98¾	99½	100¾	101¾	105½	104½	—	107	109¾	110¾	110½	109	110½	109	106¼	—	108¾	108¾	107	—	104¾
December	106¾	108½	107¾	107¾	108¾	—	108	109	109¾	106	105½	105½	—	101	99¼	90¼	93	88¼	86¾	—	88¼	88¾	88¾	88¾	—	—	—	91	93	91¾	91¾	98½
1926																																
January	—	—	—	87	87¼	85½	86½	87½	87¾	—	88½	88¼	88½	88½	84½	82½	—	75½	75½	75½	75	72	72½	72	68	66½	67	69¾	70½	69	—	79½
February	67	67½	66¼	66¾	68	69	—	—	67	65	66	66	65½	—	—	60½	60	62	59	60	62	61	56	55	60	51½	51	—	—	—	—	62¾
March	55	58	58	53	53½	57½	56	56	61	61	60	63	61½	61½	62	60½	62	61	61½	61½	61	61½	59½	59½	48	59½	60	58½	59½	58	59
April	59	59	59	59	59	58	56½	56½	53	53	51½	60½	49¼	47½	47½	48½	47	47	47½	47½	48½	49	48	48	48	46	46	48	48½	—	—	61¾
May	48½	—	—	50	50¾	49¾	49¾	49½	—	49	49½	48½	47¾	47½	43½	—	43	43	43	43	47¼	46⅜	—	43½	43½	46	46	46	42	—	—	47¾
June	41½	42	41½	42	42	41½	41½	41½	—	43	42	41½	41½	40	40	40	40	40	40	41½	44	44	41	41½	43	41½	42	42	42	—	—	42½
July	42	42	42	42	41½	41½	42	41½	41½	42	41	41½	37½	38½	38½	37½	38	38	39	39	41½	41	39¼	41½	39	42¾	42¾	41	39½	39	41½
August	—	38½	38½	38¾	37¾	—	38¾	38¾	37¾	37½	37½	37½	38¾	37½	37½	37½	37½	37½	39	39	39	41	41¾	39¼	39	42¾	42¾	42½	39½	40	39	38½
September	40¼	40¼	40¼	—	43¼	42¾	—	42½	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	41	41½	39	42¾	42¾	42¼	42¾	42¾	42½	42¾	42¾	—	41
October	43	43	—	41¾	41¾	41½	42½	42½	42½	42½	42½	42½	42½	42½	42½	43½	42½	42½	42¼	42¼	42½	42½	42½	42½	42½	42½	42½	42½	42½	—	—	42½
November	41¼	—	41	41¼	41½	41½	41½	41½	41½	42¾	41¾	41½	41½	41½	40¾	40¾	40¾	42½	42½	42½	42½	42½	42½	38½	38	42½	42½	42½	42½	—	—	42½
December	36¾	37½	37½	37½	37½	—	37	37½	37	37	37½	—	37½	37¾	37¾	38	38	38	39	38	38¼	38½	38¾	39	—	39	37¾	38¾	38½	38½	—	38¾
1927																																
January	—	—	38½	39	39¼	39¾	40¾	40¾	40¾	40½	40¾	40%	40	39¾	39¾	38	39¼	38¾	38¾	38¼	38¼	38¾	38¼	38¼	38	38¼	38¾	38¾	38	38	38	38¾
February	37¾	37¾	37¾	37¾	37½	—	—	37¾	38	37¾	37¾	37¾	38	38¼	38¼	38¾	38¾	38¾	38½	—	38¼	38¼	38½	38¼	39	39	39	39	39	38¾	38¼	38¾
March	39¾	39¾	40	40¾	41	40¾	40¾	40¾	40¾	40¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41	41¾	41¾	41¾	41¾	41½	41½	41
April	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	41¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40½	40½	40½	40½	40¾
May	—	40½	40¾	41	41	41¾	41¾	41¾	41¾	41¾	41¾	41¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
June	40%	40¾	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
July	85½	—	—	85¼	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½
August	85½	85½	85¾	85¾	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½	85½
Sept.	84	83¾	—	—	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½	83½
Oct.	38%	—	38¾	38¾	38¾	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Nov.	35	35½	35½	36¼	36¼	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾
Dec.	40½	40¾	40¾	—	40¾	40¾	—	40½	40	40½	—	40½	40	40	40½	40½	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
1928																																
January	—	—	41¾	41¾	41¾	41¾	41	41	40%	40½	40¾	40%	40	40½	40½	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	39	38%	40¼
February	37½	37¾	37¾	37½	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾
March	29	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾
April	—	27¼	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½	27½
May	17½	17¾	18¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼	19¼
June	19¾	19¾	—	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19½	19½	19½	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75
Mar.	14.53	34.21	22.33	41.00	59.00	41.04	26.82
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99
June	15.11	26.88	18.81	77.26	42.50	37.25	
July	14.67	26.10	22.16	103.16	41.03	34.44	
Aug.	13.93	25.84	26.17	82.99	38.50	35.12	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	
Dec.	27.42	26.60	37.88	98.51	38.25	40.65	
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Sixth Restriction Year—Third Quarter

Day	May	June	July	Day	May	June	July
1	8¾	9⅝		17	8⅝	—	
2	8⅝	9⅝		18	8⅝	9¼	
3	8⅝	—		19	8⅝	9⅜	
4	8¾	9⅛		20	—	9½	
5	8¾	9⅛		21	8¾		
6	—	9¼		22	8¾		
7	8¾	9⅜		23	8⅞		
8	8¾	9⅛		24	9⅛		
9	9⅛	9¼		25	9⅛		
10	8¾	—		26	—		
11	8⅞	9⅛		27	—		
12	8⅞	9¼		28	—		
13	—	9¼		29	9½		
14	8¾	9⅜		30	9½		
15	8⅞	9⅜		31	9½		
16	8¾	9⅜					

(The average price for the period for which daily prices are reported above is approximately 9.000 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28
Nov.-Jan.	14.285	14.175	17.9983	46.709	19.265	19.023
Feb.-Apr.	16.858	12.917	19.356	28.103	19.696	12.591
May-July	14.242	10.947	38.469	21.001	18.165	
Aug.-Oct.	14.944	14.632	43.269	20.199	16.620	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	May	June	Day of Month	May	June	Day of Month	May	June
1	22.30	21.05	11	22.05	20.95	21	21.55	
2	22.00	21.05	12	21.85	20.65	22	21.65	
3	21.35	——	13	——	20.90	23	21.60	
4	21.35	21.35	14	21.55	21.00	24	20.95	
5	21.40	21.15	15	21.75	21.15	25	21.10	
6	——	20.85	16	21.55	21.00	26	21.10	
7	21.95	21.00	17	21.95	——	27	——	
8	21.95	21.05	18	21.70	21.25	28	21.05	
9	21.85	21.10	19	21.60	21.25	29	21.05	
10	21.95	——	20	——	21.50	30	——	
						31	21.05	

Average Monthly Price Per Pound

Month	1926 Cents	1927 Cents	1928 Cents	Month	1926 Cents	1927 Cents	1928 Cents
Jan.	20.85	13.42	19.12	Aug.	18.57	20.04	
Feb.	20.60	14.10	18.40	Sept.	17.02	21.95	
Mar.	19.35	14.32	19.38	Oct.	13.14	20.55	
Apr.	19.13	14.75	20.63	Nov.	12.86	20.22	
May	18.92	16.07	21.58	Dec.	12.68	19.58	
June	18.57	16.85		Average for Year	17.53	17.49	
July	18.71	18.00					

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	55,198	76,172	110,244	46,296	45,312	41,256	100,434	121,484	151,500
Feb.	58,035	91,186	108,955	46,935	42,166	43,316	104,970	133,352	152,271
March	61,822	85,740	114,061	43,567	49,600	39,324	105,389	135,340	153,385
April	55,261	92,757	113,083	41,905	38,963	33,986	97,166	131,720	147,069
May	64,360	94,563	105,356	40,303	44,181	34,374	104,663	138,744	139,730
June	60,460	89,250		40,907	47,233		101,367	136,483	
July	64,900	98,469		38,062	40,587		102,962	139,056	
Aug.	60,870	96,148		37,360	40,937		98,230	137,085	
Sept.	62,078	97,829		42,464	37,966		105,542	135,793	
Oct.	64,089	97,452		52,930	42,804		117,919	140,256	
Nov.	69,385	101,034		47,311	37,076		116,696	138,110	
Dec.	72,520	100,130		52,020	47,938		124,540	148,068	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1920	1921	1922	1923	1924	1925	1926	1927
Jan.	19,300	56,573	67,252	73,498	57,460	27,172	9,994	54,994
Feb.	18,329	59,439	67,623	70,483	56,732	23,425	10,004	58,826
Mar.	18,969	63,918	66,670	63,438	55,647	18,104	13,127	63,055
Apr.	20,072	68,759	68,637	58,770	54,559	12,949	18,773	66,897
May	20,921	70,403	70,146	54,439	51,615	5,895	20,384	67,169
June	22,517	69,408	71,597	51,050	51,115	5,318	23,984	63,902
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727	63,717
Aug.	30,674	73,211	72,112	58,427	49,700	4,619	30,165	64,491
Sept.	35,504	72,175	70,977	54,523	44,011	5,453	35,077	68,236
Oct.	41,743	69,229	68,536	58,891	37,523	5,086	42,138	69,569
Nov.	45,550	70,786	68,548	60,074	33,593	3,869	44,057	67,050
Dec.	50,652	69,792	72,299	60,246	29,488	5,697	48,918	63,793

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1927					
July	63,917	64,163	63,511	62,819	63,626
August	64,177	64,557	64,842	64,259	
September	65,162	66,148	66,664	67,253	
October	68,519	70,167	70,916	70,060	69,551
November	69,660	69,501	69,850	67,318	
December	65,869	66,011	64,761	63,397	63,207
1928					
January	64,360	65,524	65,450	66,285	
February	65,909	64,945	63,769	63,103	
March	61,978	61,920	61,033	59,644	58,197
April	58,732	58,945	56,819	53,360	
May	52,015	50,837	48,705	44,628	
June	43,716	42,683	41,185		

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1926	1927	1928	End of	1926	1927	1928
Jan.	16,726	25,440	25,868	July	23,101	22,558	
Feb.	13,653	26,766	22,867	Aug.	23,362	25,764	
Mar.	18,389	27,844	20,538	Sept.	25,997	25,178	
Apr.	16,328	24,543	16,946	Oct.	26,614	25,790	
May	16,967	25,133	17,437	Nov.	25,486	28,369	
June	19,416	21,898		Dec.	26,443	25,798	

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1922	16,297,735	0.0	1925	26,001,664	66.8
1923	23,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19,700,003	79.1
1927			1928		
July	1,679,587	84.4	January	1,811,534	87.8
August	1,825,905	80.2	February	1,806,437	86.5
September	1,727,122	77.7	March	2,420,084	86.4
October	1,354,924	81.4	April	2,316,324	88.4
November	838,591	67.8	May	2,185,592	84.0
December	1,134,421	80.0	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927	1928
January	11,918,000	14,386,000	17,582,000	17,888,000	20,939,000
February	9,626,000	13,210,000	15,814,000	18,240,000	21,136,000
March	10,961,000	14,890,000	19,302,000	22,464,000	24,041,000
April	14,583,000	19,013,000	20,848,000	23,371,000	25,712,000
May	15,889,000	20,459,000	24,213,000	26,579,000	
June	16,421,000	20,724,000	23,803,000	27,799,000	
July	18,610,000	22,879,000	24,752,000	29,784,000	
August	19,825,000	22,323,000	26,912,000	29,779,000	
September	16,871,000	20,177,000	22,929,000	28,409,000	
October	18,029,000	19,826,000	23,973,000	25,497,000	
November	16,607,000	18,024,000	20,618,000	24,400,000	
December	15,663,000	17,954,000	21,419,000	23,718,000	
TOTAL	185,003,000	223,865,000	262,165,000	297,928,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927
Production	40,932	45,259	51,633	60,845	61,237	64,439
Shipments	39,987	45,204	50,120	59,262	59,002	64,059
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	4,587	4,965	5,491	2,974	4,932	5,394	9,947	10,432	9,949
Feb.	4,865	5,095	6,363	3,436	4,458	5,031	11,164	11,075	11,721
Mar.	5,456	6,276	6,819	4,561	5,701	5,731	12,004	11,583	12,389
Apr.	5,346	6,299	6,178	4,980	5,701	5,812	12,461	12,122	12,717
May	5,023	6,151		5,211	5,657		12,343	12,462	
June	5,422	6,202		5,724	6,253		11,968	12,462	
July	4,950	5,087		6,337	5,973		10,592	11,326	
Aug.	5,872	5,752		6,744	6,393		9,732	10,721	
Sept.	5,706	4,822		6,040	5,717		9,318	9,722	
Oct.	5,103	4,773		4,544	4,799		9,917	9,665	
Nov.	4,324	4,502		3,733	4,306		10,297	10,136	
Dec.	4,683	4,497		4,718	4,165		10,456	10,264	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927
Production	50,850	60,116	70,706	82,614	76,618	70,823
Shipments	49,673	59,072	68,016	81,004	71,591	72,896
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	6,809	5,337	5,441	3,723	6,016	6,072	14,361	15,585	12,982
Feb.	6,825	5,658	6,895	3,736	5,120	5,431	17,090	16,075	14,650
Mar.	7,030	7,184	6,231	4,987	6,157	5,731	19,131	17,096	15,573
Apr.	6,554	7,373	6,661	5,051	6,359	5,702	20,674	17,801	16,638
May	6,149	6,737		6,304	6,140		21,141	18,389	
June	6,171	6,306		6,898	6,832		20,243	17,858	
July	5,729	5,284		8,569	7,070		17,267	16,004	
Aug.	7,424	6,480		9,579	7,983		15,462	14,664	
Sept.	7,590	5,651		7,762	6,758		15,312	13,511	
Oct.	6,208	5,065		5,474	5,024		15,929	13,539	
Nov.	4,852	4,775		4,045	4,723		16,604	13,585	
Dec.	5,277	4,969		5,463	4,712		16,200	13,692	

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1921	1,595,304	1,452,902	142,402	66,246	61,098	5,148	1,661,550
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927							
Jan.	238,926	199,650	39,276	15,376	11,745	3,631	254,302
Feb.	304,758	264,171	40,587	18,655	14,826	3,829	323,413
March	394,430	345,911	48,519	23,250	19,723	3,527	417,680
April	404,743	357,009	47,734	24,611	20,890	3,721	429,354
May	404,099	357,148	46,951	25,708	21,991	3,717	429,807
June	321,959	278,728	43,231	19,208	16,470	2,738	341,167
July	268,474	236,866	31,608	10,987	8,719	2,268	279,461
Aug.	308,807	274,378	34,429	12,526	10,139	2,387	321,333
Sept.	260,420	226,440	33,980	11,262	8,681	2,581	271,682
Oct.	219,712	183,041	36,671	7,791	6,236	1,555	227,503
Nov.	134,381	109,742	24,639	6,617	5,173	1,444	140,998
Dec.	133,178	105,784	27,394	3,435	2,277	1,158	136,613
TOTAL	3,393,887	2,938,868	453,010	179,426	146,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	233,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March	412,825	371,408	41,417	9,724	7,478	2,246	422,549
April	409,948	364,877	45,071	24,240	20,546	3,694	434,188
May							
June							
July							
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1926:															
Jan.	30,452	10,237	20,215	4,246	1,273	416	472	289	4,110	6,239	8,165	866	1,284	1,805	49,380
Feb.	30,440	8,306	22,134	5,129	725	488	450	253	4,624	5,717	6,854	554	2,759	1,978	51,556
Mar.	35,012	14,800	20,212	5,177	1,113	792	561	418	4,527	5,566	11,984	573	2,126	1,899	54,948
Apr.	23,727	10,565	13,162	3,766	590	679	374	293	4,226	4,598	6,285	410	2,318	1,529	38,230
May	31,231	10,604	20,627	3,944	691	927	410	279	4,440	5,358	8,737	502	1,353	1,464	48,732
June	30,624	11,764	18,860	4,208	452	779	512	275	4,444	6,125	10,614	549	1,213	1,279	49,310
July	28,824	15,280	13,544	4,422	938	911	498	439	4,618	5,612	13,112	1,521	1,565	1,148	48,328
Aug.	34,625	13,595	21,030	5,666	521	890	476	316	4,132	5,699	10,390	378	1,888	1,097	52,482
Sept.	35,913	13,972	21,941	6,015	651	888	689	457	4,065	6,568	11,391	681	2,156	822	56,324
Oct.	39,367	15,203	24,164	5,672	634	805	473	385	4,058	6,998	11,491	661	1,904	1,023	58,268
Nov.	34,302	12,201	22,101	4,228	1,110	685	547	285	3,988	5,816	9,422	718	1,911	1,259	52,070
Dec.	36,811	14,716	22,095	6,498	1,176	895	617	338	5,054	7,117	12,786	790	3,821	714	61,901
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,187	6,706	10,690	941	3,482	981	56,404
Feb.	27,528	11,697	15,831	3,571	1,469	552	445	360	4,078	6,526	10,535	675	2,104	1,098	47,244
Mar.	41,346	17,464	23,882	7,142	1,124	997	639	432	5,657	7,004	12,905	783	3,178	1,791	65,484
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,666	5,531	10,197	557	2,451	1,520	46,928
May	31,393	15,491	15,902	3,124	760	786	415	348	5,430	5,529	13,410	586	2,460	1,207	49,957
June	32,607	14,706	17,901	3,348	856	1,100	589	409	4,818	5,518	9,109	772	889	1,731	46,990
July	23,947	12,697	11,250	4,018	827	859	544	333	4,771	6,142	11,566	519	1,757	1,118	43,699
Aug.	30,371	17,105	13,266	5,357	688	1,133	623	546	4,355	6,682	12,440	716	1,928	969	48,703
Sept.	29,835	12,095	17,740	4,911	479	645	566	498	3,635	5,957	9,853	497	2,072	1,213	48,066
Oct.	29,846	15,801	14,045	5,245	802	721	591	542	3,810	7,755	13,633	775	2,752	939	51,520
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	591	600	4,127	6,587	14,395	683	2,369	1,627	46,378
Dec.	32,185	17,865	14,320	4,130	1,395	946	592	664	5,763	7,878	13,438	1,191	3,340	1,444	55,101
1928:															
Jan.	27,731	16,618	11,113	4,352	1,605	842	500*	525	4,851	7,988	11,360	720	2,273	1,025	47,154
Feb.	28,813	12,911	15,902	4,353	1,081	667	500*	536	4,052	6,757	8,635	723	1,612	1,276	46,094*
Mar.	27,813	10,508	17,305	3,460	775	645	500*	269	3,999	5,826	9,690	613	2,750	1,200*	85,353*
Apr.	20,029	9,335	10,694	3,460	789	630	500*	258	3,993	5,040	5,538	518	1,014	1,200*	62,998*

(1) Mayalan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Italy, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States*	United Kingdom	France (h)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,089	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	34,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,643
1926:															
January	40,345	6,886	2,832	703	2,188	892	760	332	438	76	163	303	89	134	56,141
February	31,435	3,114	3,063	1,113	1,865	741	1,041	643	512	148	88	397	145	75	44,375
March	40,316	3,907	3,941	1,342	2,079	864	1,037	832	547	129	227	377	109	161	60,868
April	33,416	3,275	4,121	1,781	1,615	1,869	865	402	505	71	93	335	130	193	53,670
May	28,705	6,773	2,519	1,848	1,239	1,010	705	200	468	186	241	225	60	192	44,371
June	28,795	5,894	2,196	1,655	1,188	1,465	1,070	983	636	269	215	303	123	103	39,895
July	34,266	6,768	2,352	2,202	1,552	1,447	800	132	702	295	480	292	121	115	51,524
August	26,081	7,327	2,457	2,110	1,888	1,284	796	655	1,275	303	594	336	90	151	45,847
September	35,675	8,843	1,774	2,029	1,855	1,922	819	472	1,241	283	429	317	91	138	55,388
October	28,110	8,082	3,376	2,423	1,865	2,396	645	585	1,004	301	2	360	100	121	49,370
November	37,673	9,247	2,719	3,007	1,548	3,380	832	568	916	194	-18	358	90	181	60,695
December	35,850	4,749	2,890	2,562	1,847	856	439	725	777	248	156	443	151	306	51,999
1927:															
January	41,815	10,192	3,284	2,481	1,936	1,227	672	803	929	296	192	316	139	100	64,382
February	25,886	7,692	3,263	3,103	2,620	1,902	601	907	460	502	152	336	146	210	47,780
March	32,752	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,269
April	44,627	7,875	2,310	2,393	1,509	2,181	781	1,972	762	448	58	230	177	218	65,541
May	33,736	2,896	2,006	3,380	2,519	1,084	918	887	694	626	-57	335	155	223	49,402
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	583	-17	243	164	183	46,616
July	35,719	1,116	2,384	2,899	2,104	1,505	1,007	415	900	429	66	227	177	236	49,184
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	-63	312	138	123	47,785
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	-33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,538
November	36,123	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	246	317	54,570
December	28,082	309	4,696	3,108	2,302	2,710	1,462	1,453	1,242	784	-202	514	268	300	47,028
	398,483	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,492	636	4,224	2,055	2,672	627,789
1928:															
Jan.	37,120	1,921	1,764	2,485	2,290	1,361	546	572	802	589	52	261	335	376	50,474
Feb.	30,926	3,143	2,526	2,984	2,553	1,258	655	159	616	599	98	307	296	297	46,417
Mar.	36,970	3,179	1,902	3,521	2,989	1,707		1,468		816	95				
April	35,686	2,280		2,719	1,938										

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—United Kingdom exports to Russia, and beginning with October, 1927, exports from the United States to Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926 and to 5,019 tons in 1927

BOOK REVIEWS

MANLEY GARAGE EQUIPMENT. Catalogue No. 6, 1928. Published by the Manley Manufacturing Company, York, Pa. 56 pp.

The latest edition of this catalogue covers the complete line of garage equipment of the Manley Manufacturing Company, including automatic tire changers and tire inspectors. The company is one of the best-known in their line and is a familiar name to garage and repair shops throughout the country. This year's catalogue embraces several new items and is the most comprehensive thus far published by the company.

PROPOSED SPECIFICATIONS OF U. S. GOVERNMENT FOR BICYCLE TIRES, SINGLE TUBES AND CLINCHER. Federal Specification Board, Bureau of Standards, Washington, D. C.

The Federal Specifications Board is adopting and promulgating purchase specifications for commercial commodities purchased by the various departments and establishments of the United States Government. The above mentioned specifications in their formative stage are being submitted to representative manufacturers for their comments and criticism.

In their present form the specifications outline what is generally considered the standard bicycle tire without any outstanding differences or requirements not now present in the ordinary article of trade.

FACTS AND FIGURES OF THE AUTOMOBILE INDUSTRY. 1928 Edition. Published by the National Automobile Chamber of Commerce, U. S. A. 96 pp.

In this tenth annual edition a number of new tables and compilations are made available for the first time, such as a tabulation of the major automobile markets, methods of taxation in different states, gasoline consumption by states, transcontinental bus routes and figures on metropolitan traffic. The annual editing of these volumes has been done with such excellent care and exhaustive effort that they have come to be looked upon as a dependable reference for all classes of automotive statistics.

FACTS AFFECTING THE IMPORTATION OF RUBBER TIRES AND TUBES THROUGHOUT THE WORLD. 1927 Edition. Prepared by the Rubber Division, Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C.

The new edition of this manual on export trade in tires and tire sundries, as revised by C. R. Hill, formerly assistant chief of the rubber division of the Department of Commerce at Washington and now with the Fisk Export Company at Chicopee Falls, Mass., is of a more statistical nature than previous editions. It is probably the most comprehensive survey on the export trade in tires and tire sundries that has ever been made available, every geographical section of the world is covered. In all, ninety-nine countries and political territories receive separate treatment. The information contained in the manual, however, is not for general publication and is intended for the confidential use of such American firms as are engaged in export trade.

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*	Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1919	81,366	73,535	36.3	.....	1924	80,079	76,072	22.4	.....
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....					
1927:									
Jan.	16,526	12,374	39.3	25,903	July	15,488	13,842	47.4	26,599
Feb.	15,860	14,424	47.8	27,291	Aug.	15,109	15,836	47.3	25,157
Mar.	16,788	13,528	37.4	27,124	Sept.	14,392	14,790	54.3	23,429
Apr.	14,483	16,677	46.5	25,712	Oct.	16,127	17,292	64.5	22,176
May	16,159	15,754	46.1	26,419	Nov.	15,477	14,876	55.5	21,728
June	16,652	15,547	46.0	25,811	Dec.	16,083	13,431	52.7	24,980
1928:									
Jan.	14,862	18,134	52.7	21,941	July				
Feb.	15,291	16,808	49.9	20,848	Aug.				
Mar.	17,069	18,619	52.2	19,558	Sept.				
Apr.	15,393	17,355	52.9	19,283	Oct.				
May					Nov.				
June					Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927.

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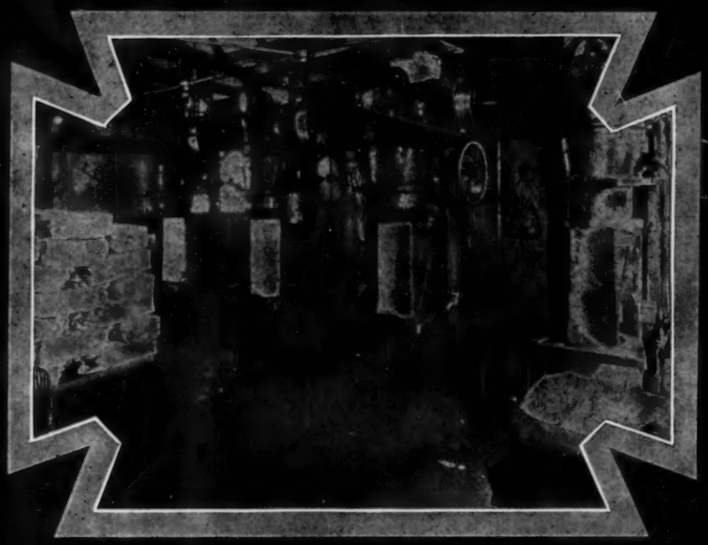
CERTIFIED
CARBON BLACK



Packing room in Cabot Plant, showing automatic packers.

IN our factories quality is as easily measured as weight. The exclusive Cabot uniformity control test for Carbon Black before packing, makes every bag true to grade—therefore a dependable Rubber Black.

Clean, full weight packings, nearby stocks, and prompt shipments are also included with Cabot service.

Godfrey L. Cabot, Inc.
940 Old South Bldg., Boston, Mass.